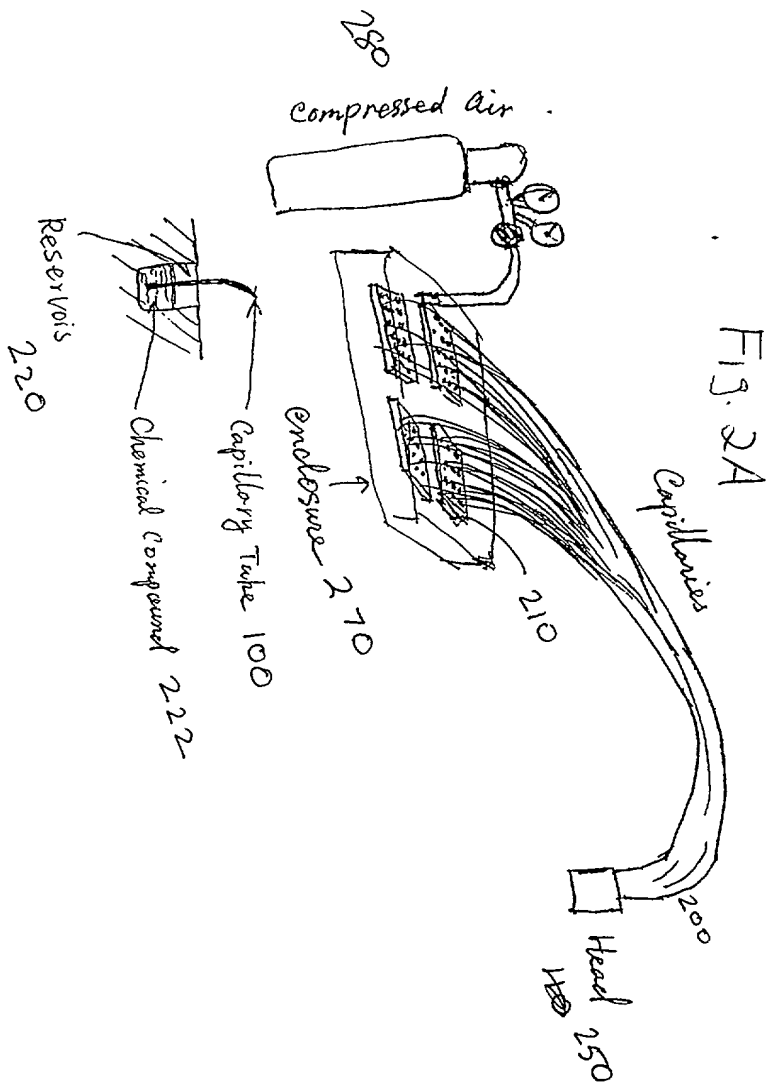


Figure 1

205T/CO/11220800T



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XHTS

-- Microarrays and Fiber Bundles

Imaging

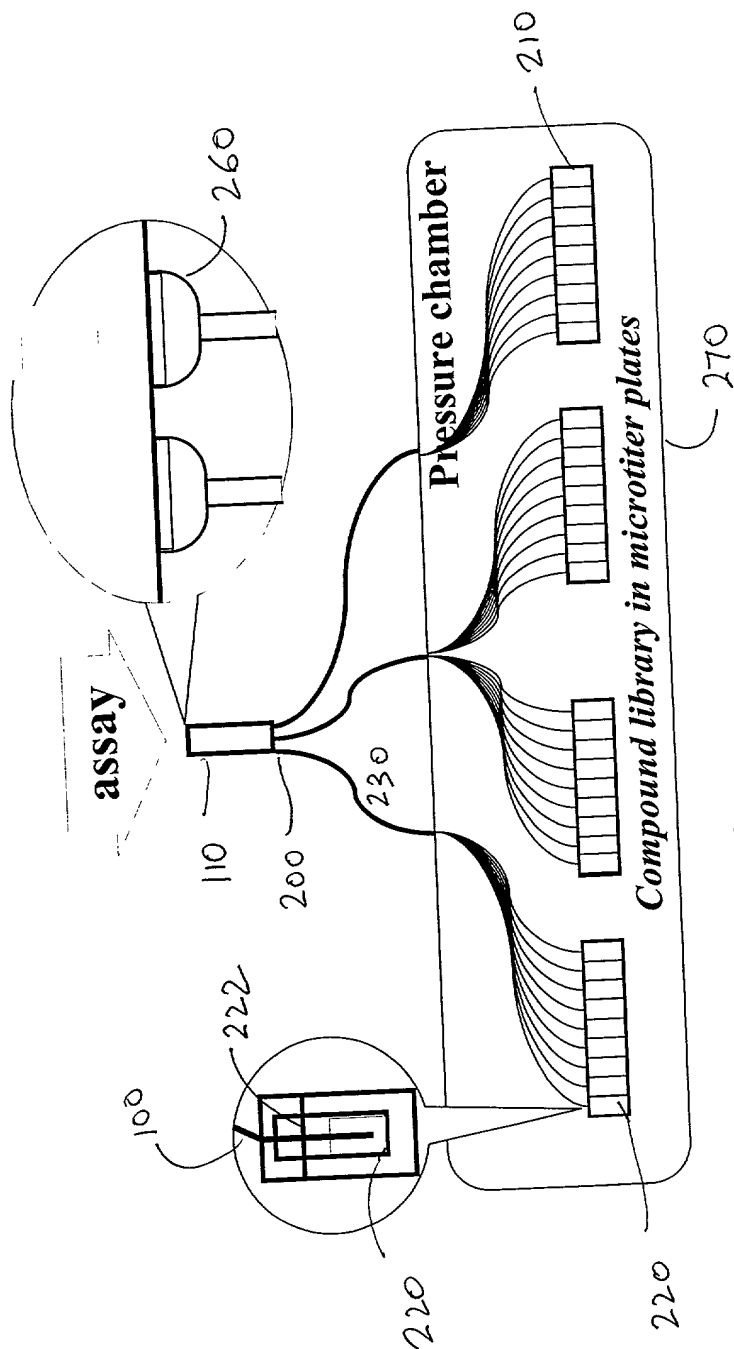


FIG. 2B

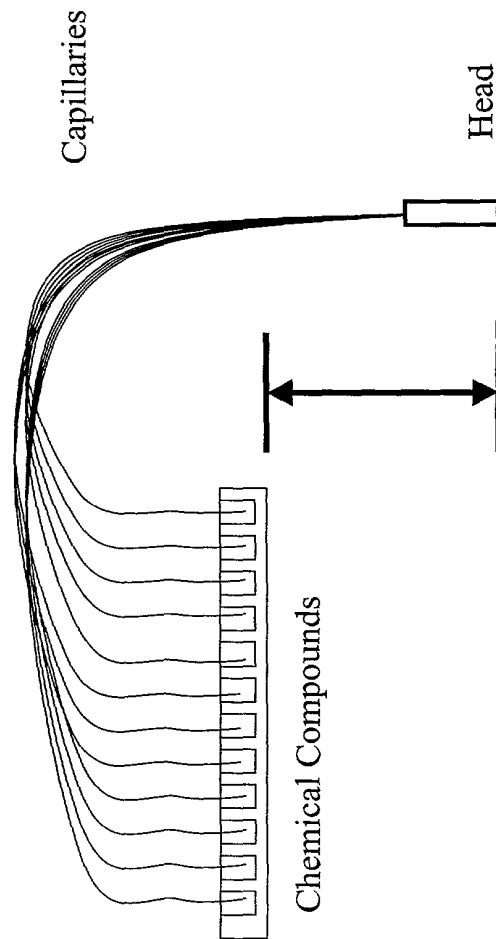


Figure 3

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200809274.07.15.02

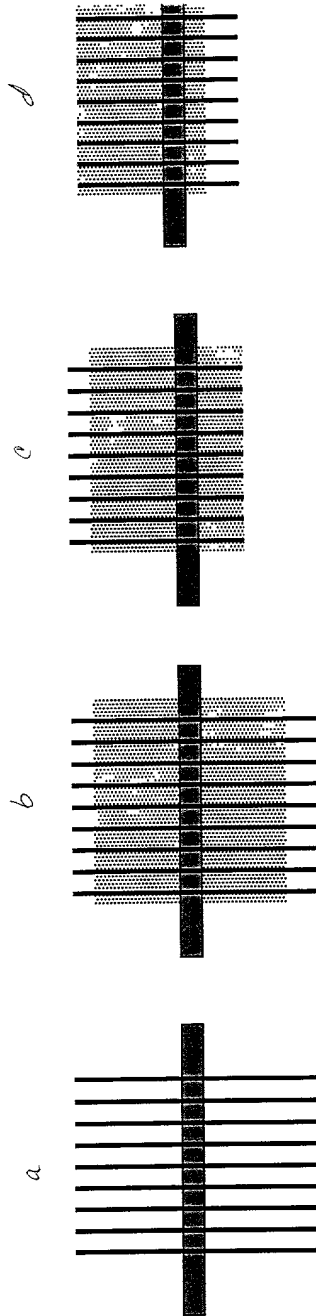


Fig. 4. Fabrication of delivery head using a guide plate

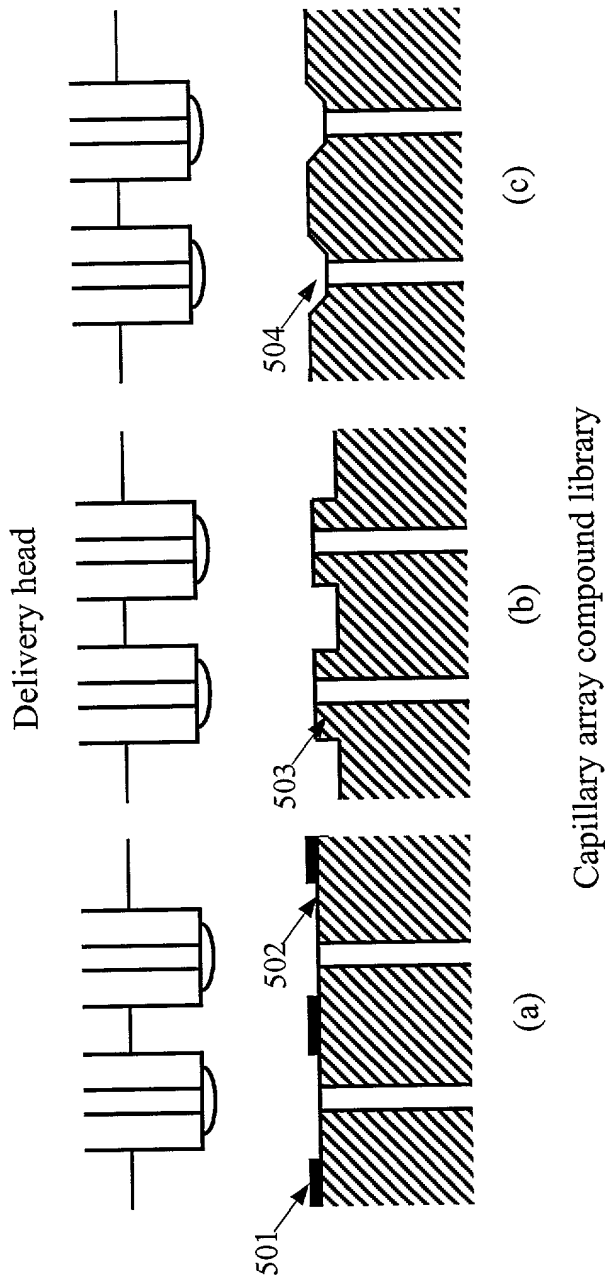


Fig. 5. Surface features on the surface of the capillary array compound library to prevent cross-contamination during compound loading

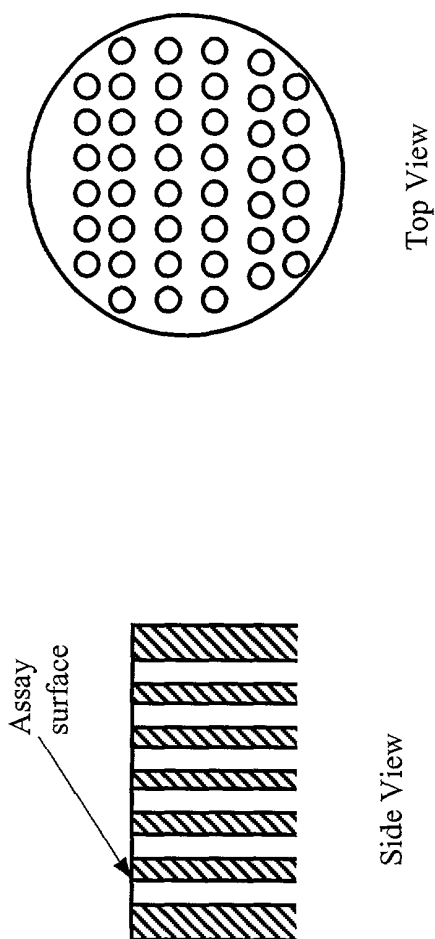


Fig. 6. Basic configuration of capillary array substrate for the portable compound library

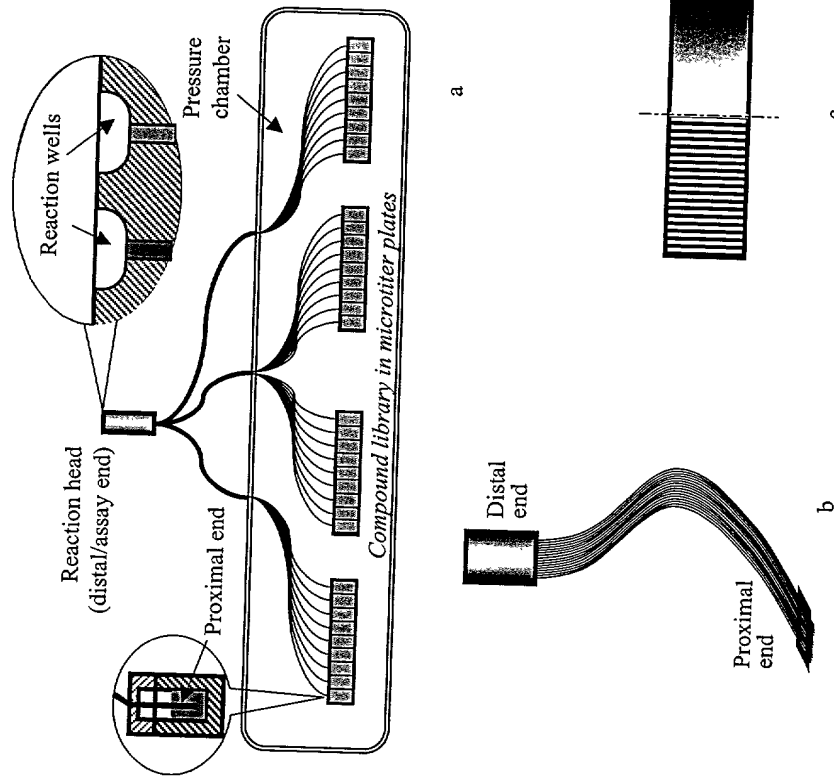
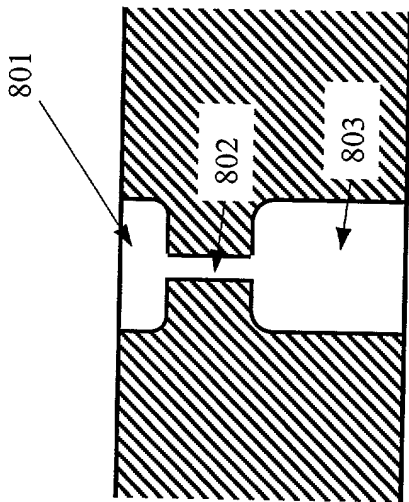


Fig. 7 The capillary array compound library in different formats



- 801 – Mixing/reaction well
- 802 – Flow regulator for reagent metering
- 803 – Compound reservoir

Fig. 8. Internal structure of a through hole in capillary array compound library

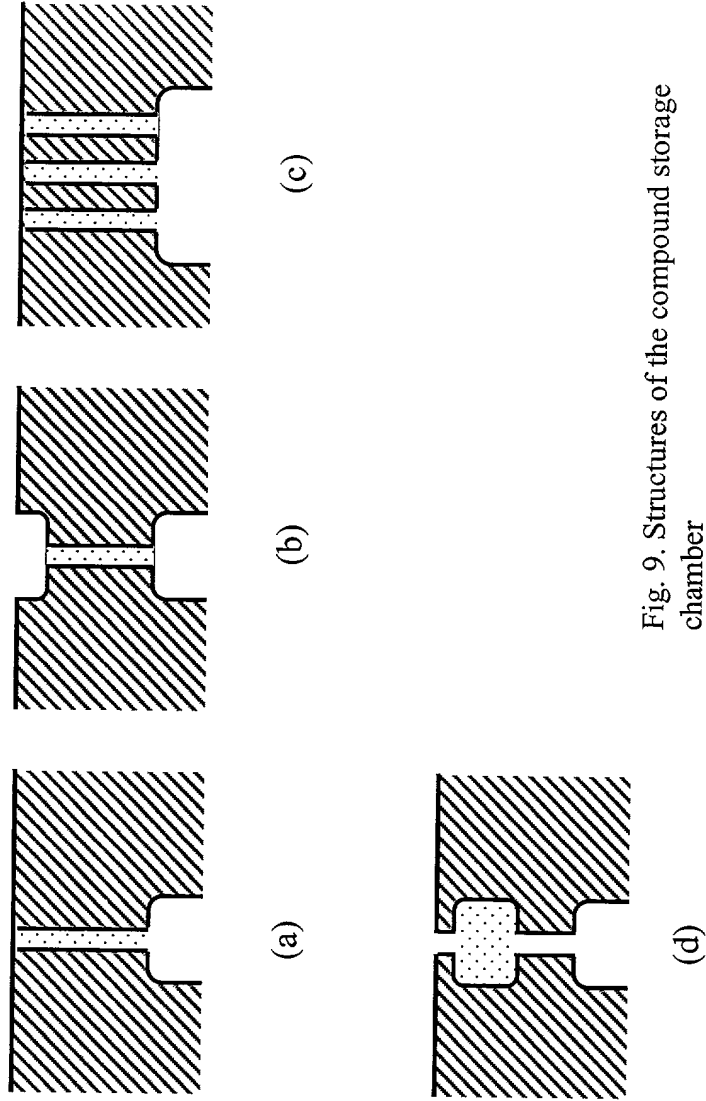


Fig. 9. Structures of the compound storage chamber

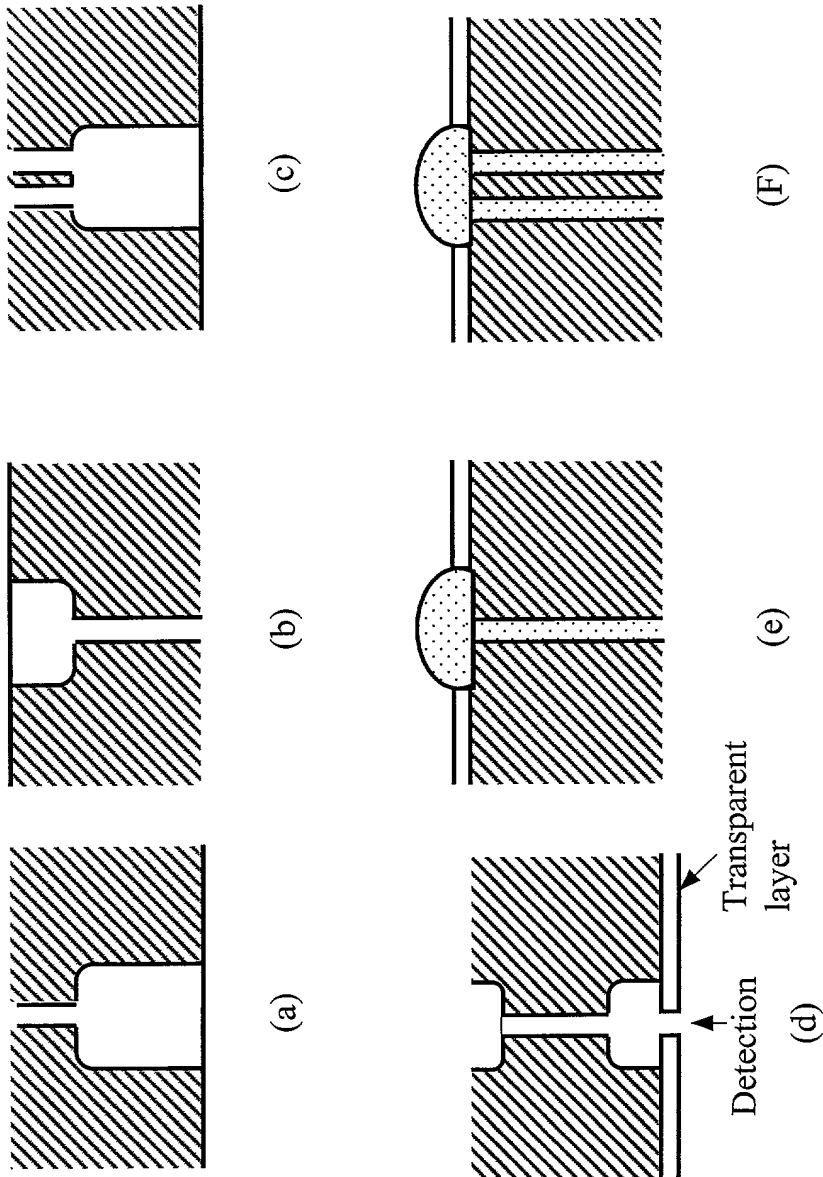


Fig. 10. Internal structures of mixing/reaction chamber

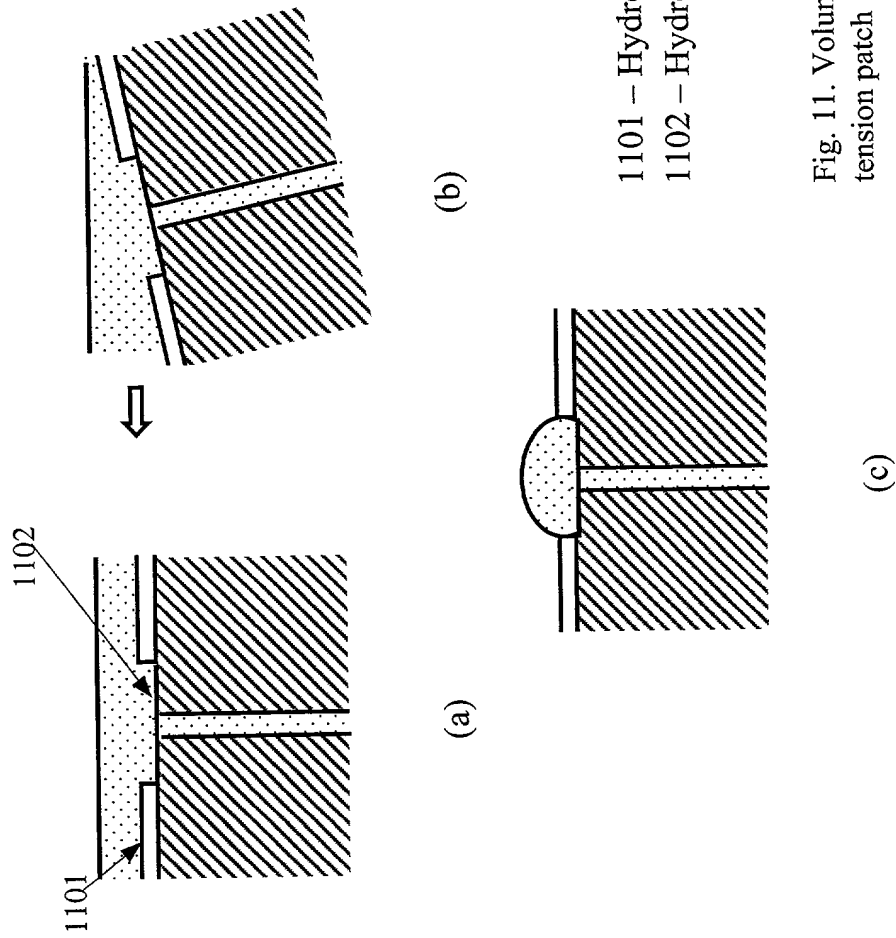


Fig. 11. Volume metering by surface tension patch

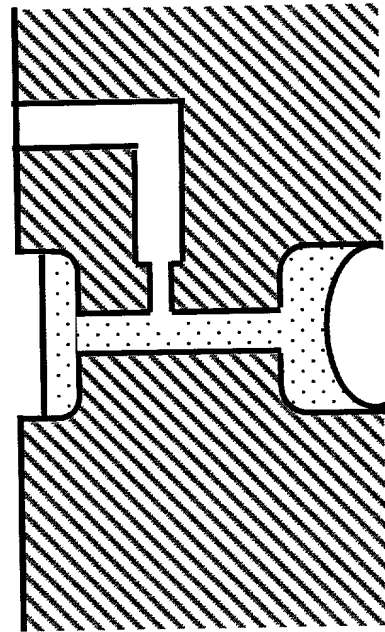


Fig. 12. Fluid regulator with side air tunnel

Fig. 13 Internal through hole structures to facilitate chamber volume metering and mixing

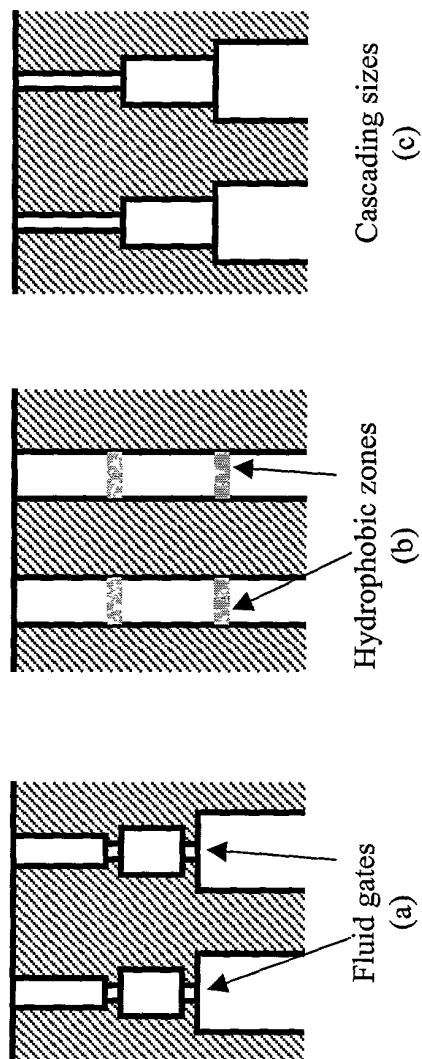


Fig. 14 Process of metering multiple reagents using interconnected chambers

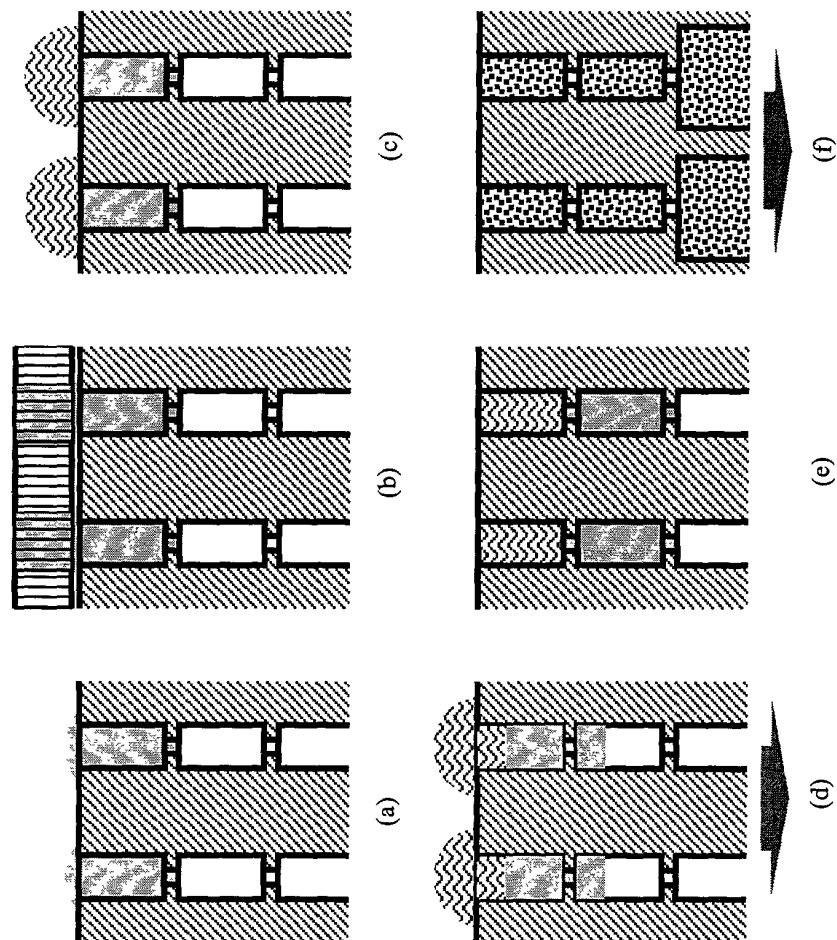
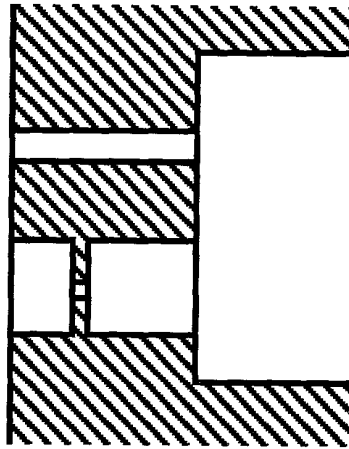


Fig. 15 Special through hole structure where multiple chambers links to a chamber in parallel



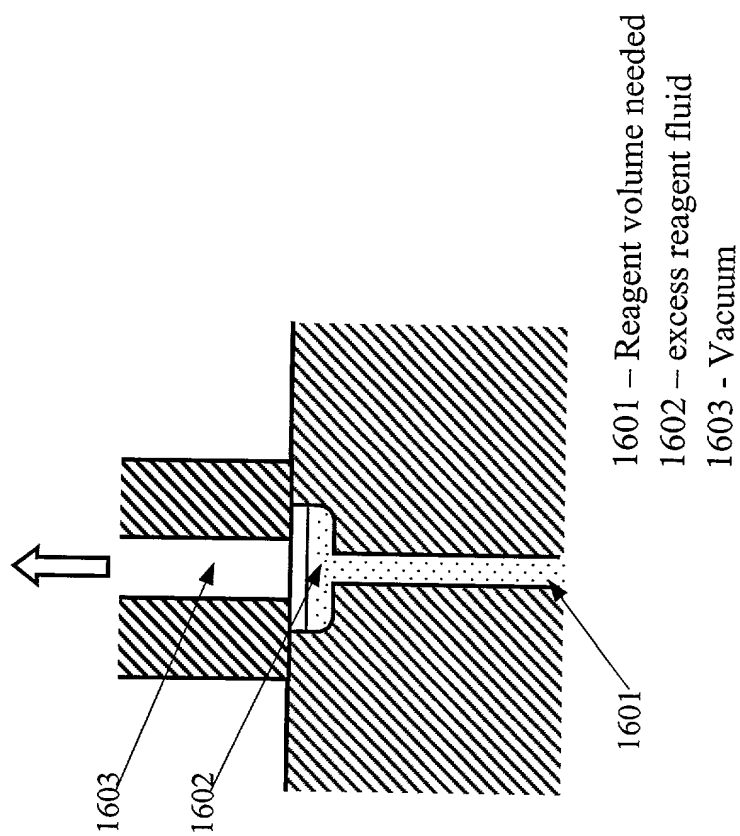


Fig.16. Removal of excess fluid by vacuum

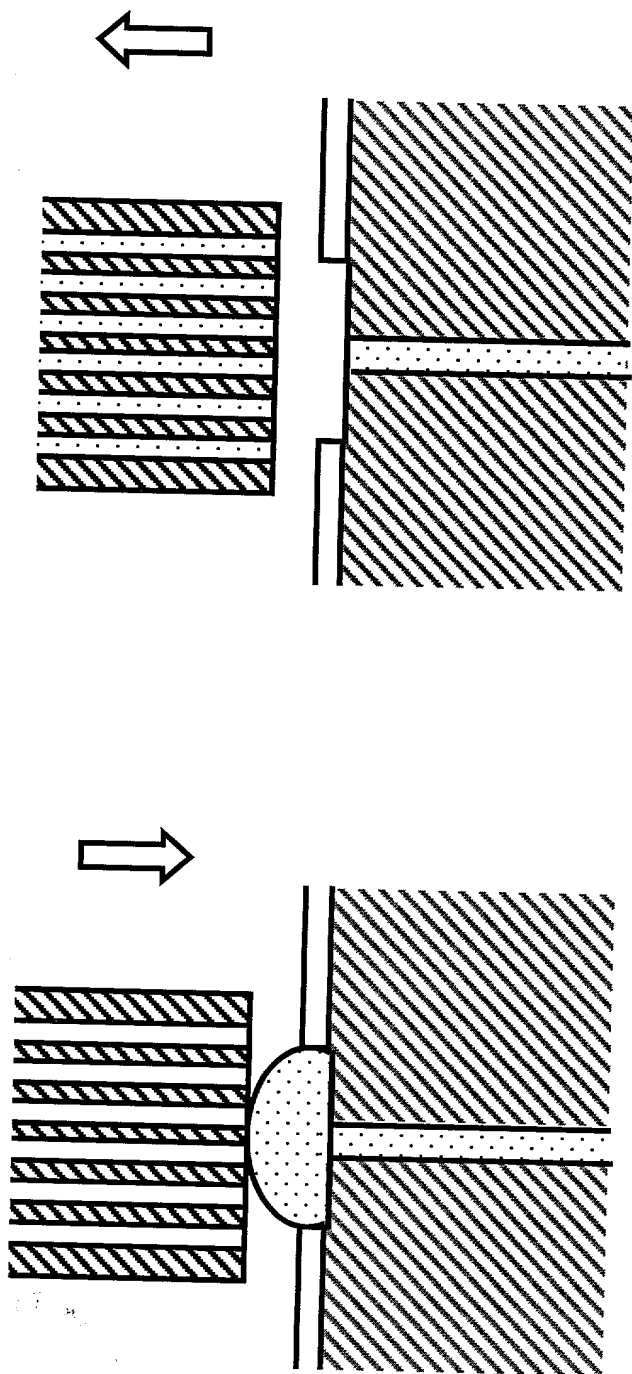
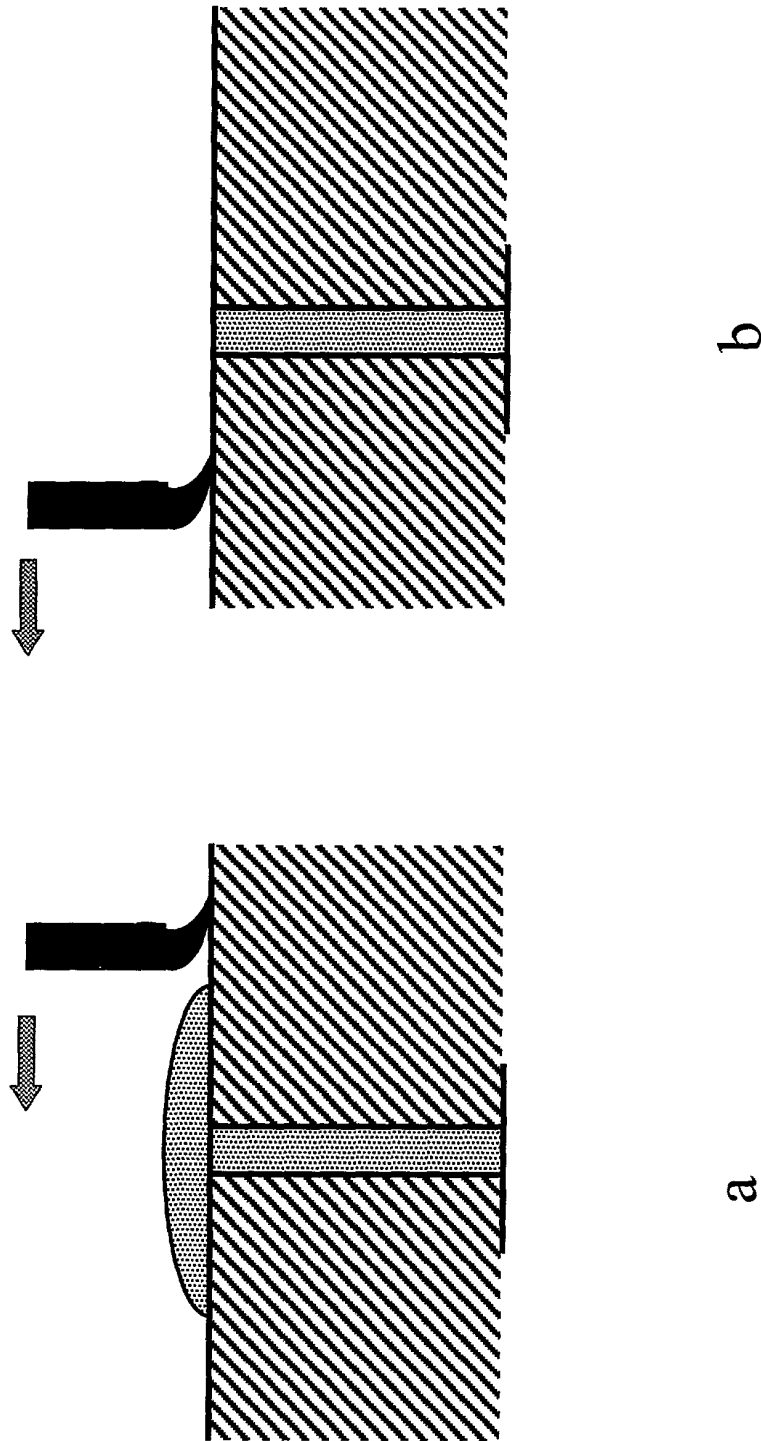


Fig. 17. Excess fluid removal using a second capillary array

Fig. 18. Excess Fluid Removal by Wiping



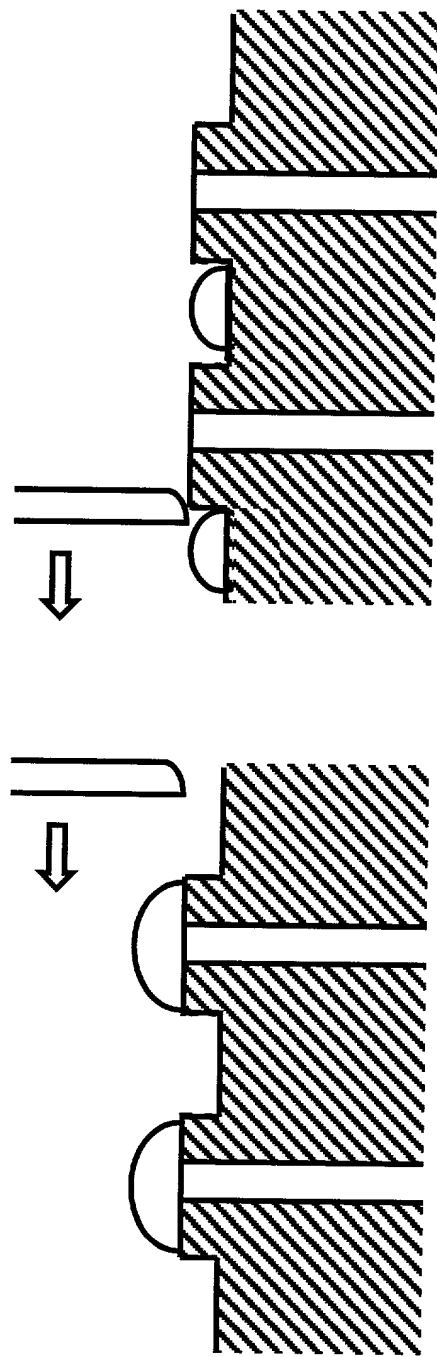
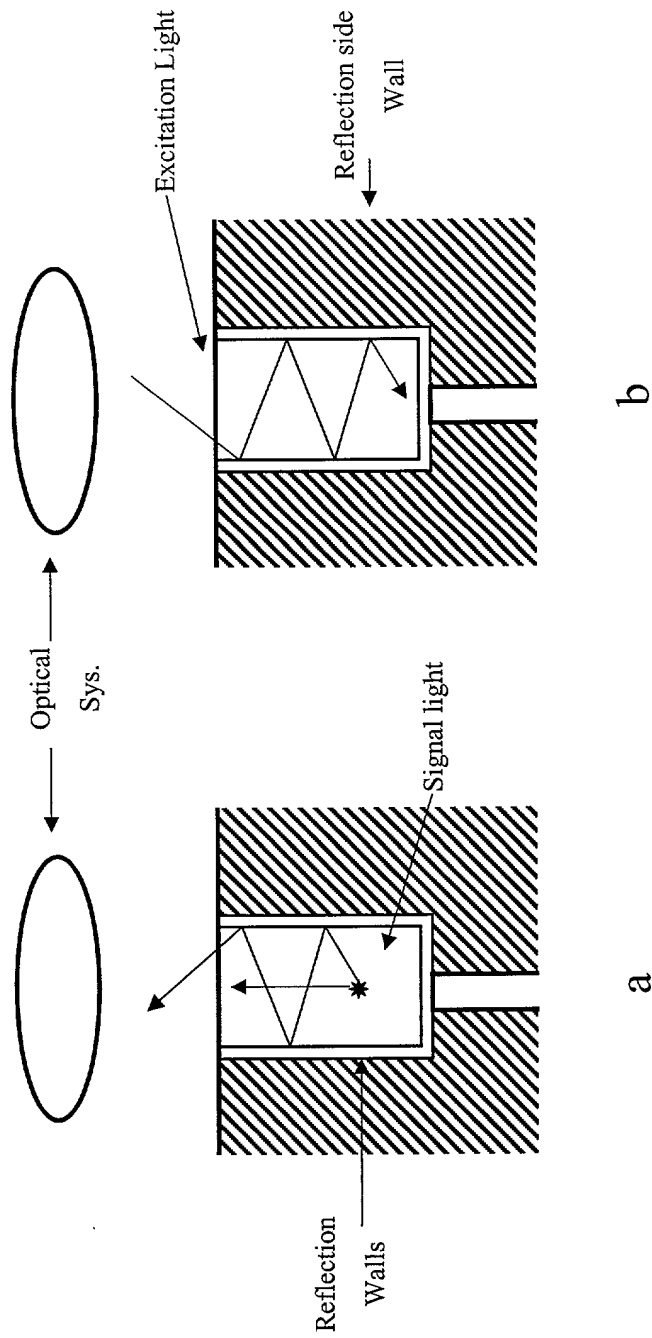


Fig.19. A method for reducing cross-contamination between adjacent holes during excess fluid removal

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Fig. 20. Using Reflection Wall of Reaction Chamber to Enhance Optical
Signal of the Assay



200510742800T

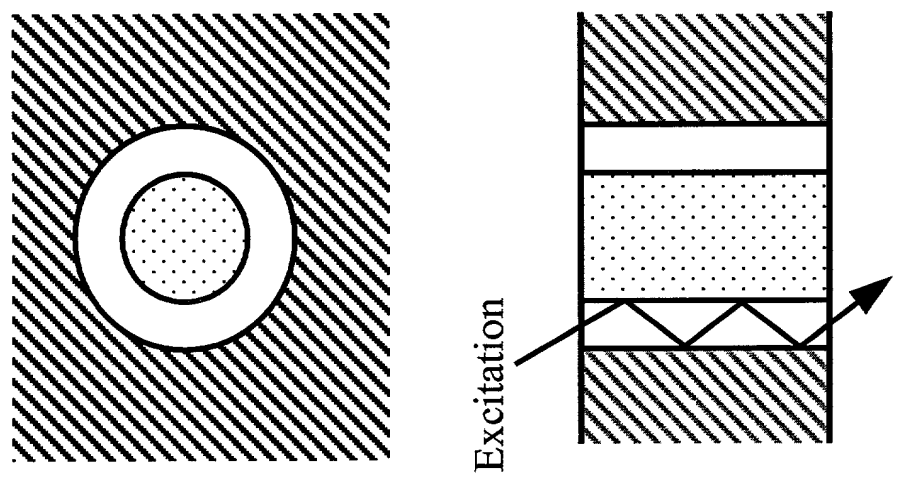
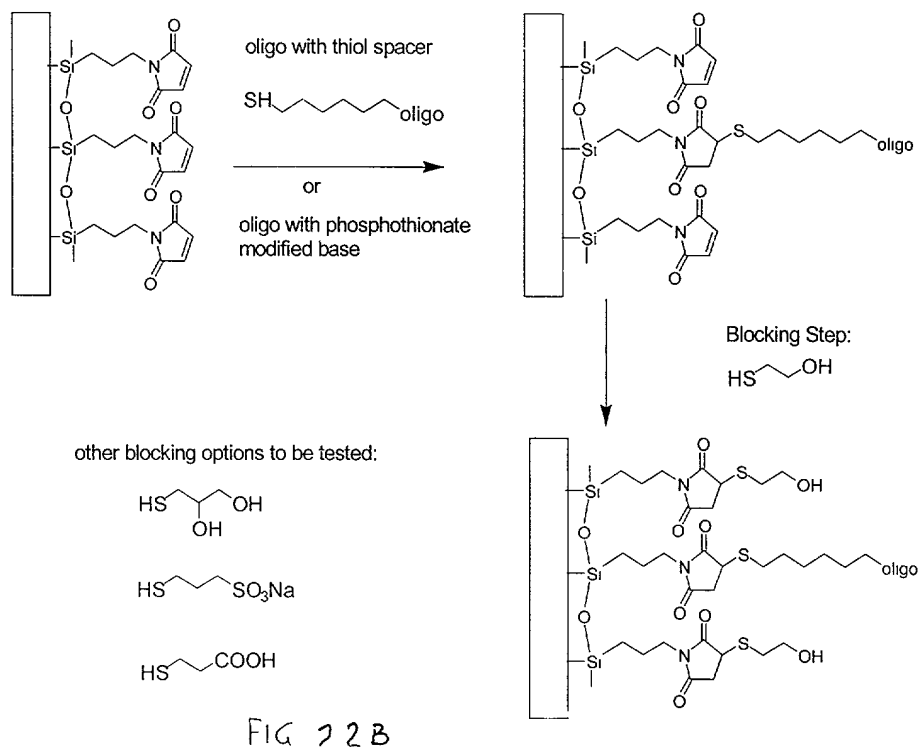
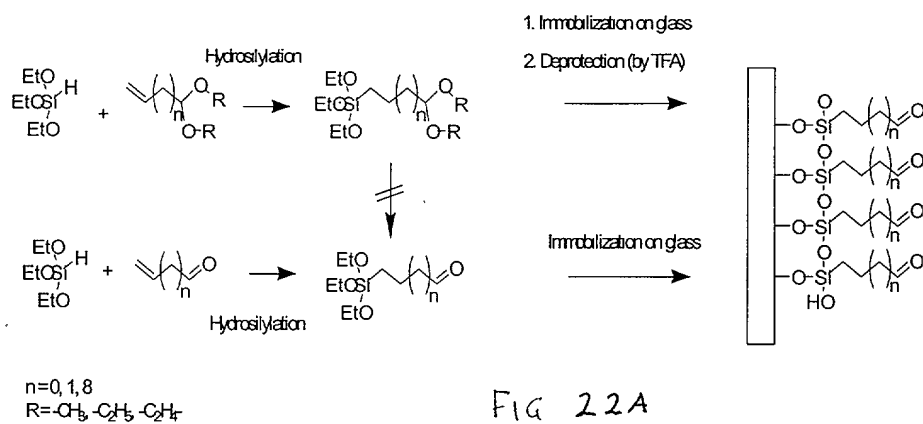


Fig 21. Light guiding capillary



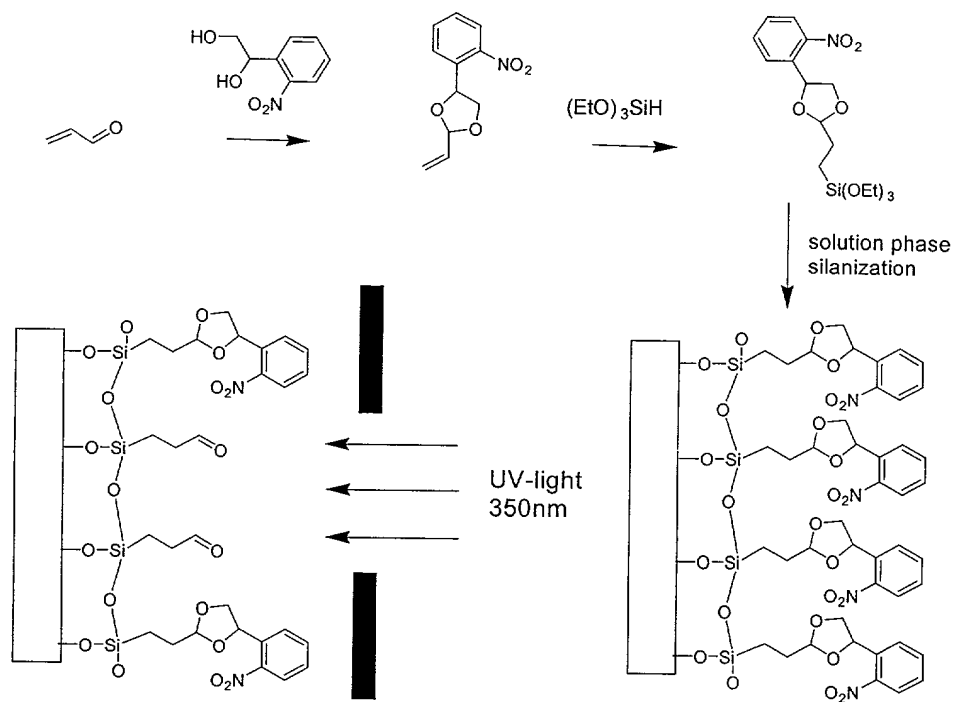


FIG 22C

Figure 23 Process for fabrication using a negative mask

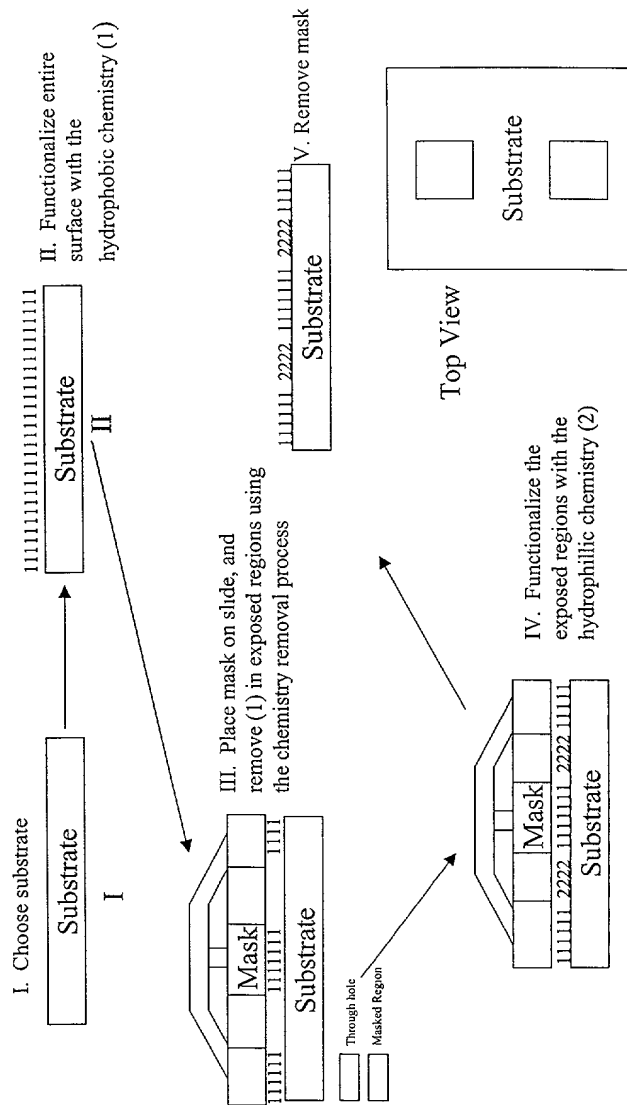


Figure 24 Process for the fabrication using positive

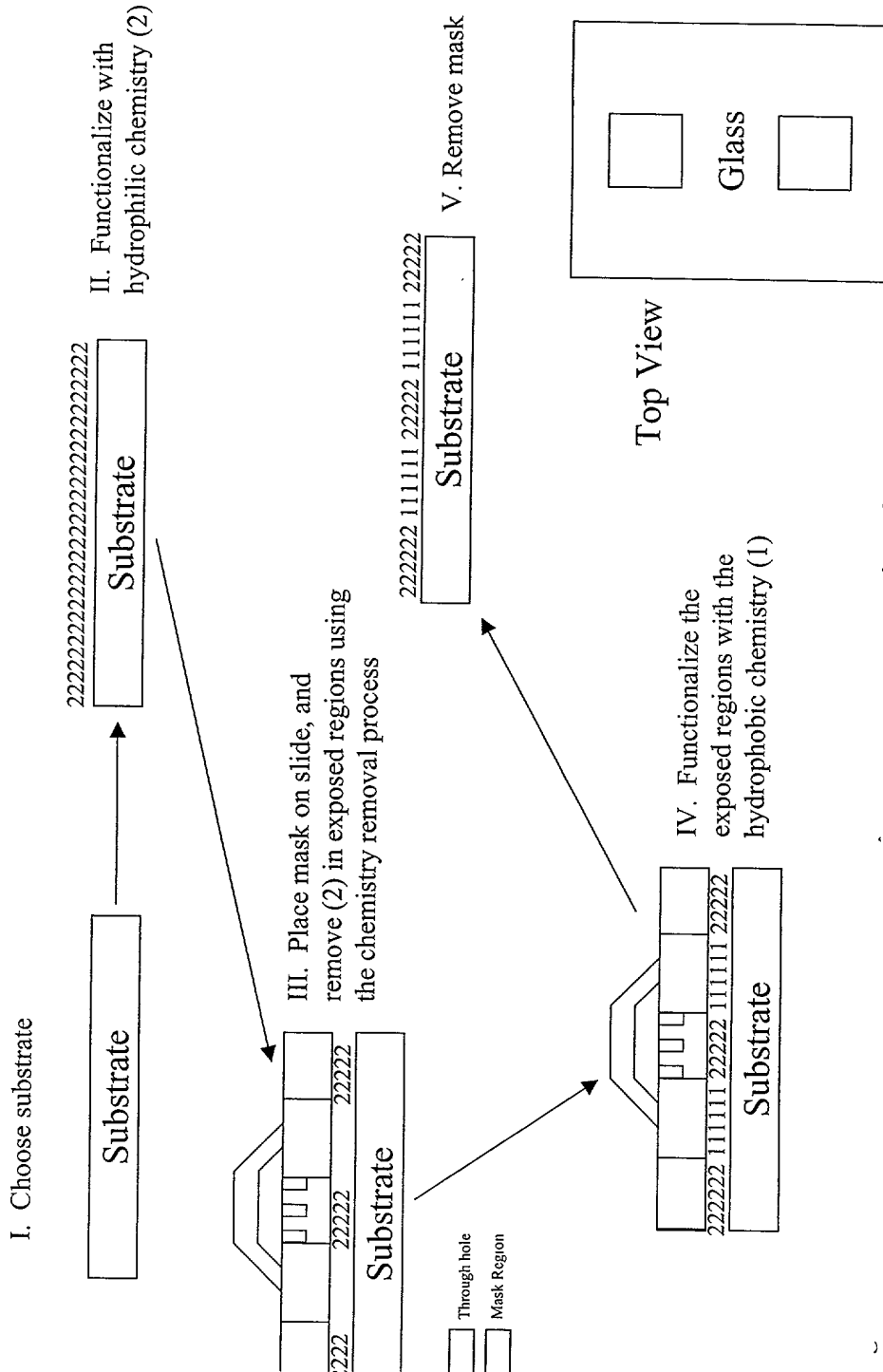
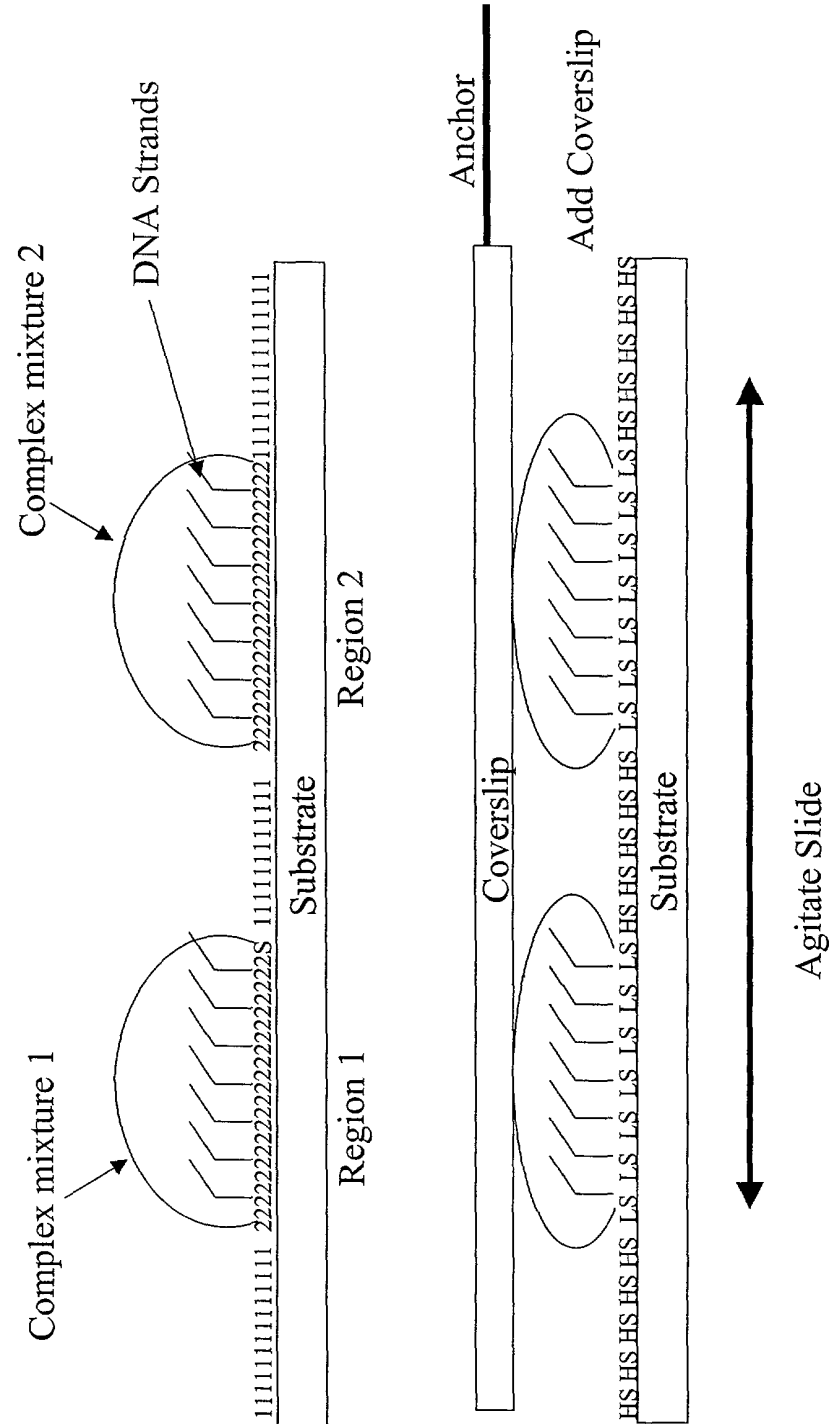
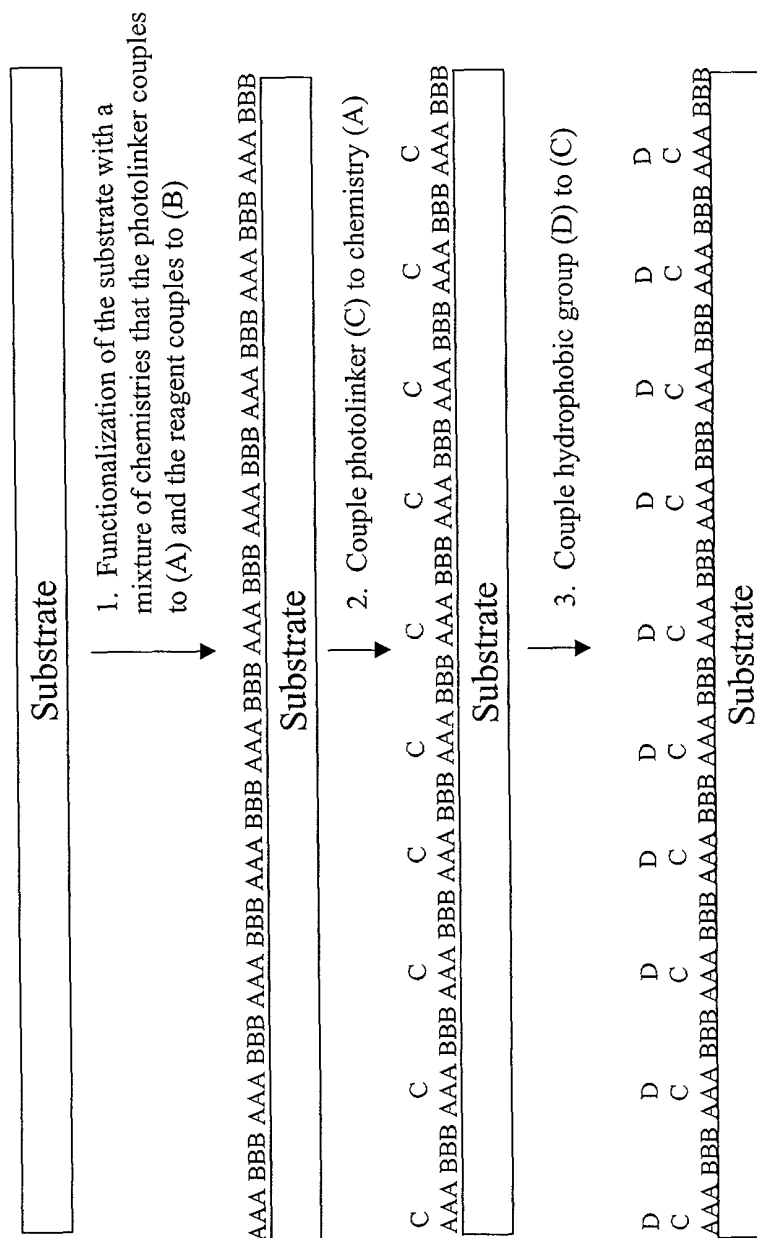


Figure 25 Chamber use





- Photolyze and deposit reagent to be coupled to the surface



Figure 27A Volume Metering using Surface
Tension Features

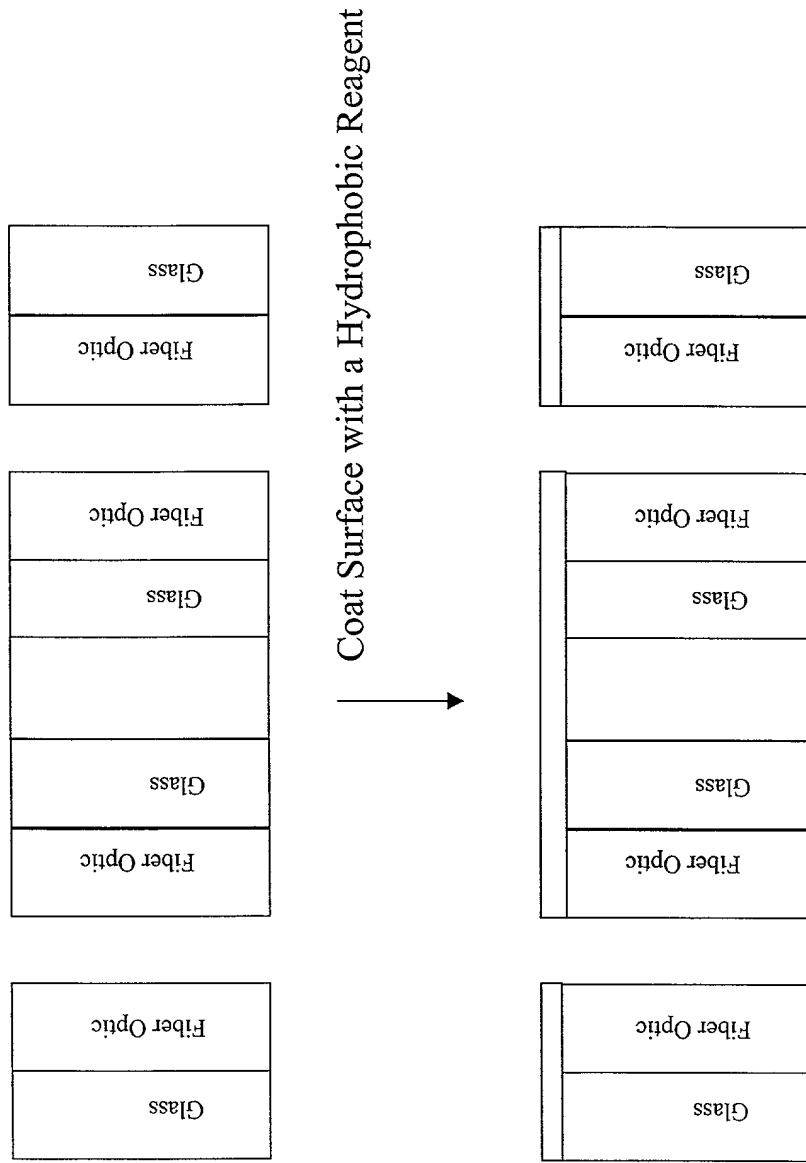


Figure 27B Volume Metering using Surface Tension Features

Place a Mask on to the Surface and Expose the Surface to the Chemistry Removal Process

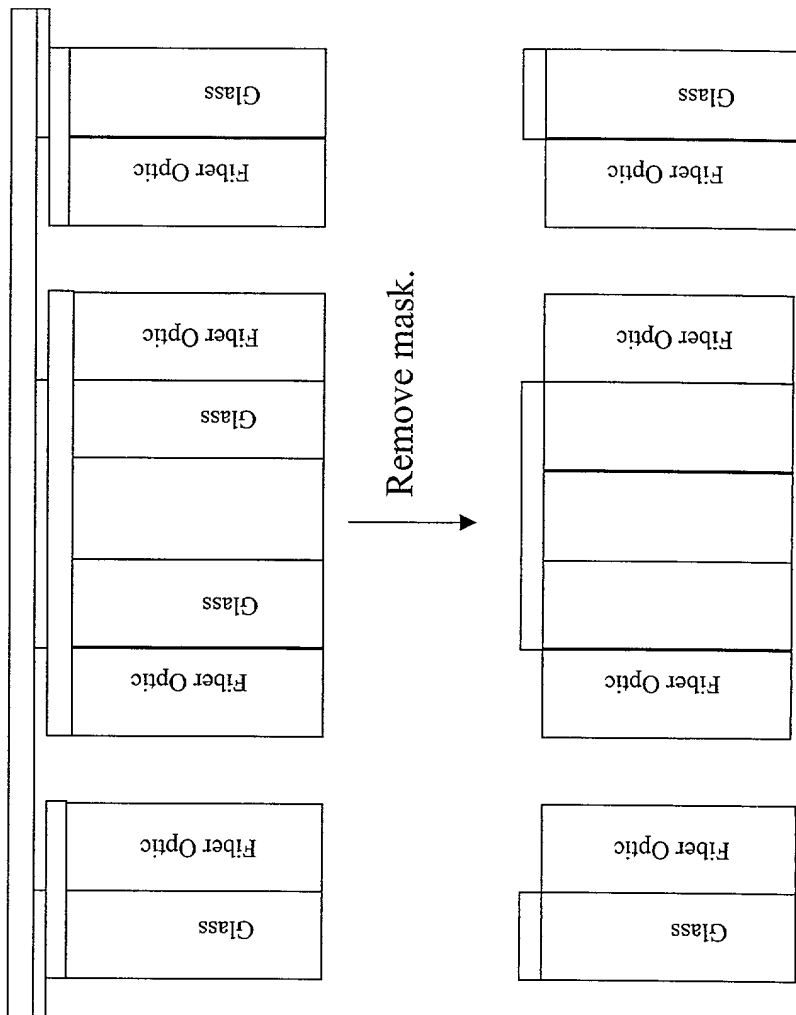
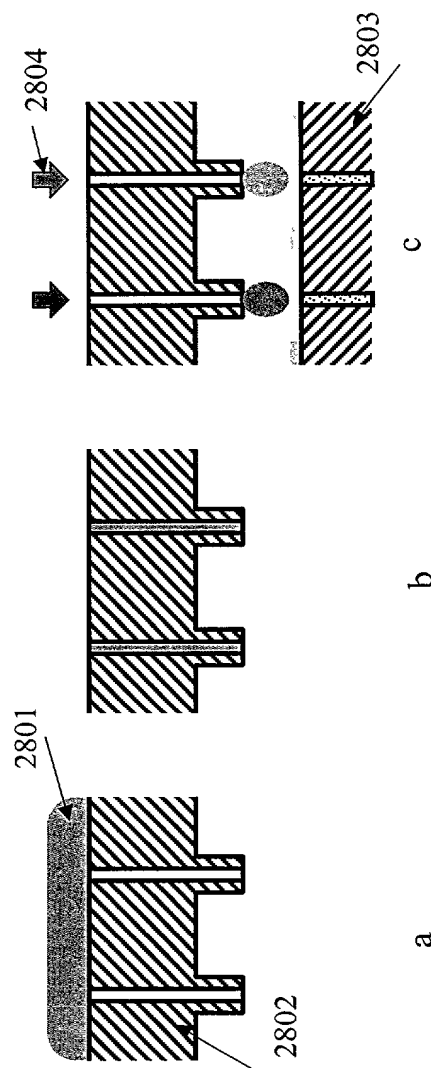


Fig. 28 Reagent pre-metering using an intermediary through-hole array



2801 - reagent fluid applied in excessive;
 2802 - intermediary through hole array;
 2803 - capillary array compound library;
 2804 - pressure

Fig. 29 Metering and mixing with a multi-use capillary array
compound library

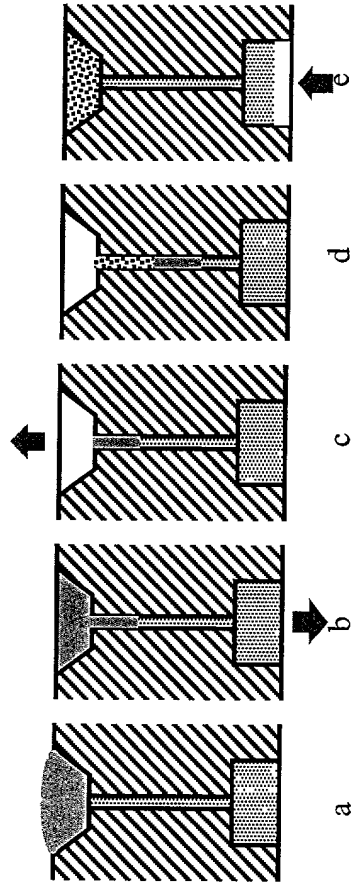


Fig. 30 Metering with hydrophilic patch and mixing

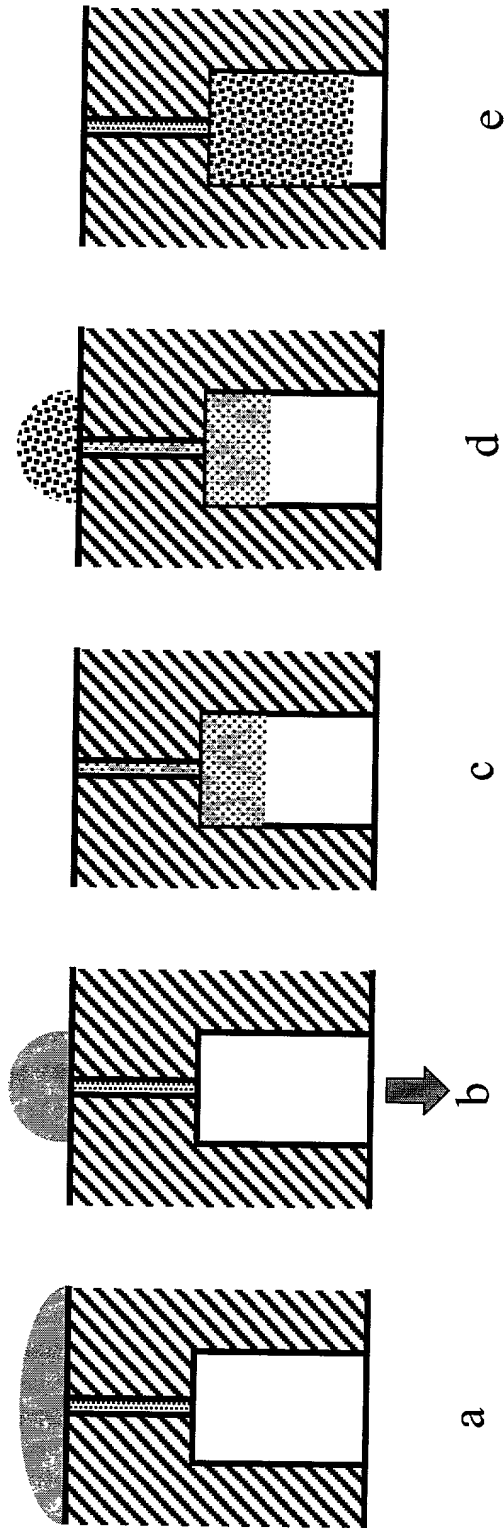


Fig. 31 Mixing and metering with interconnected chambers

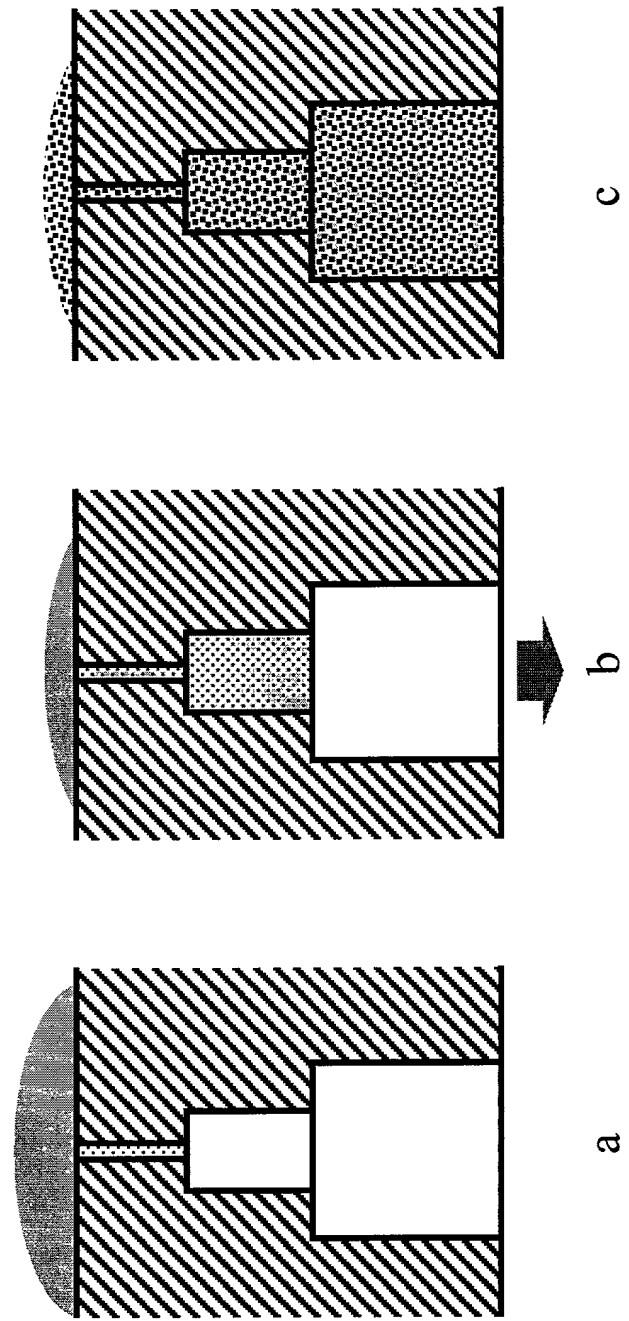
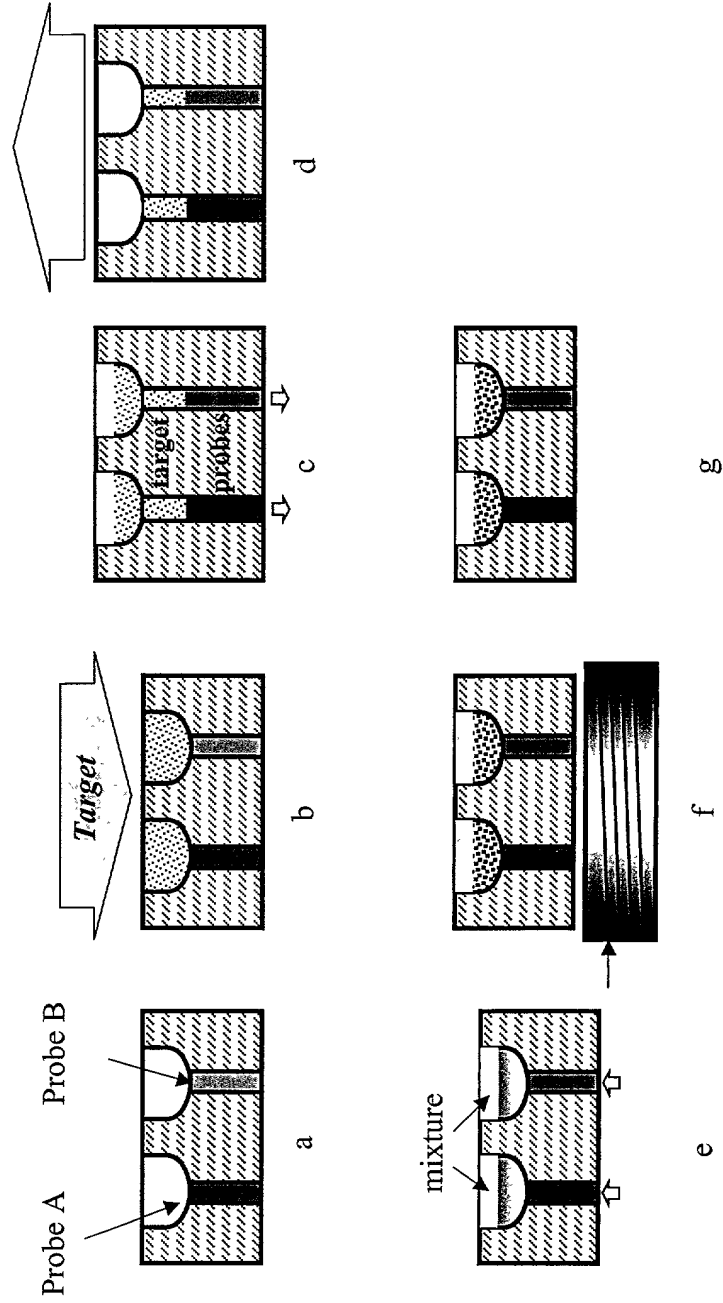


Fig. 32 Heterogeneous Assay

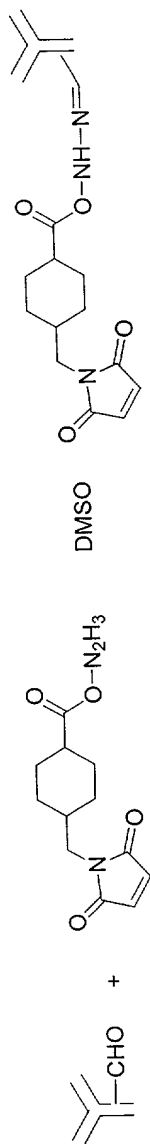


Antibody Immobilization via the Carbohydrate Moiety

1. Oxidation of antibodies vicinal diol group to its aldehyde



2. Conjugation of maleimide moiety with antibody



3. Immobilization of the modified antibody to the surface.

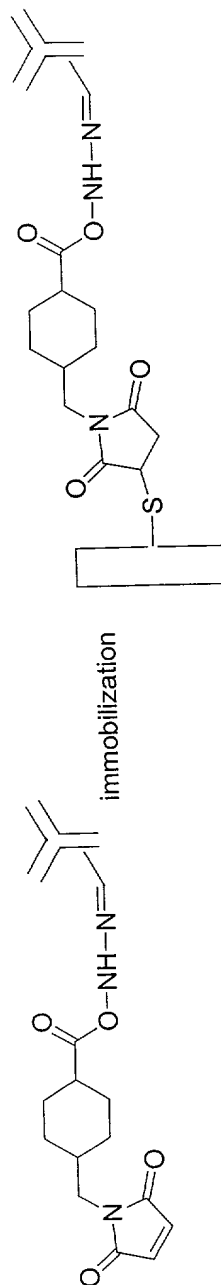
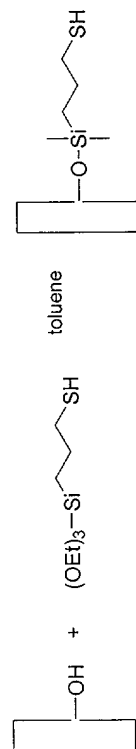


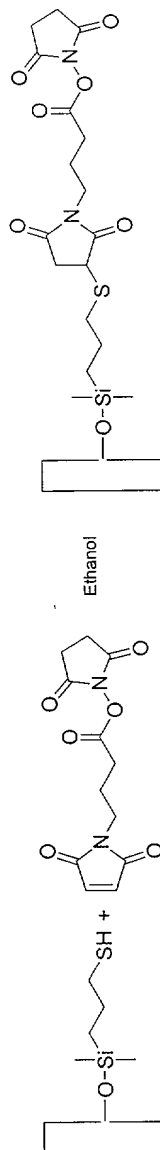
FIG. 33A

Immobilization via Amine Groups

1. Hydrosilylation of (3-mercaptopropyl)triethoxysilane on the surface of fiber



2. Formation of a thioether bond



3. Attachment of fiber to antibody

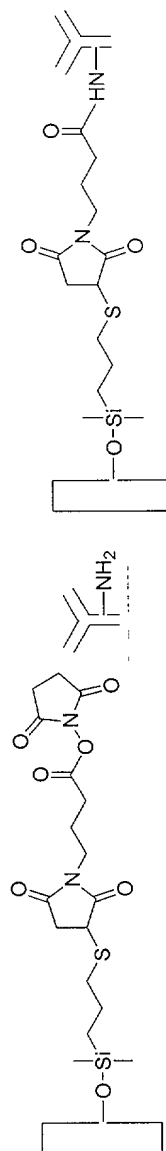
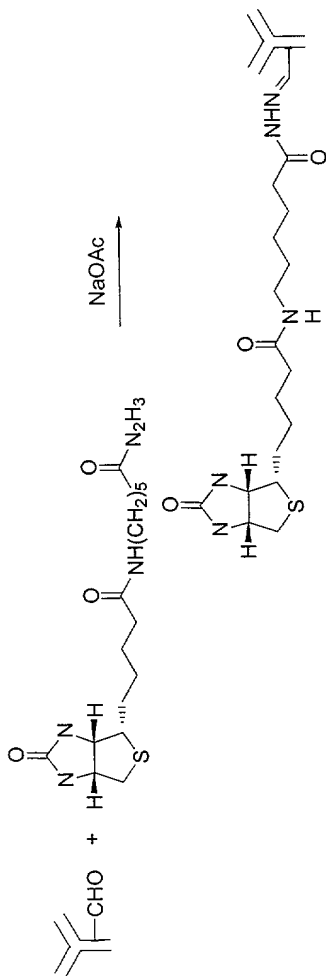


FIG 33B

Antibody Immobilization via Streptavidin

1. Label antibody with biotin



2. Modification of fiber surface with biotin maleimide

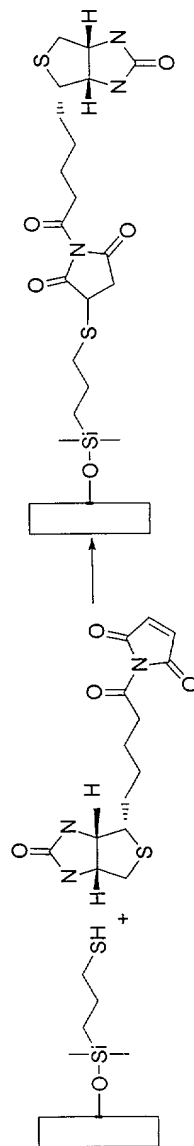
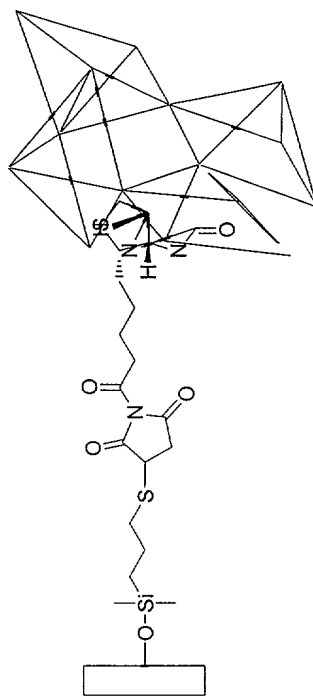


FIG 33c

Meeting 12/14/01

Antibody Immobilization via Streptavidin

3. Conjugate Streptavidin to the surface



4. Conjugate Biotin Antibody to the surface

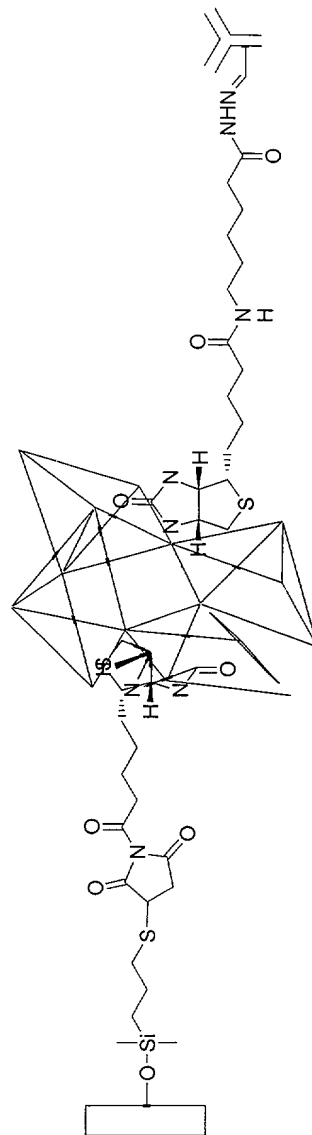
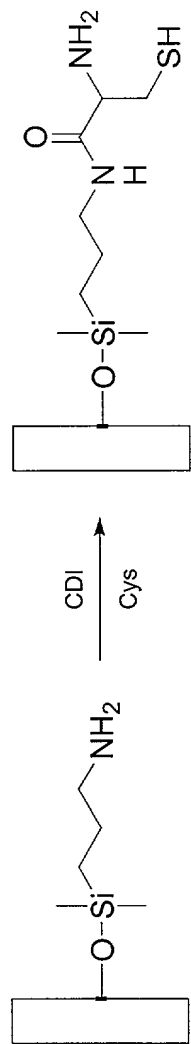


Fig. 33D

Formation of thiazolidine

1. Surface attachment and formation of the linker



2. Thiazolidine formation

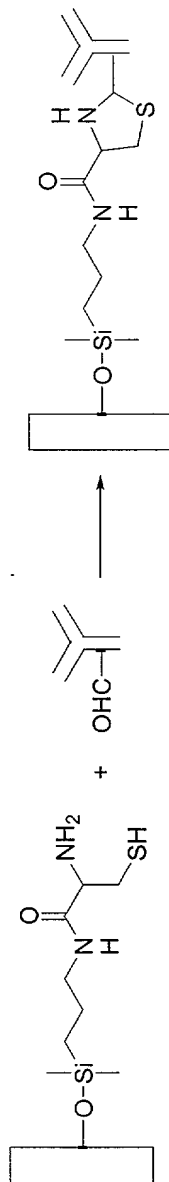
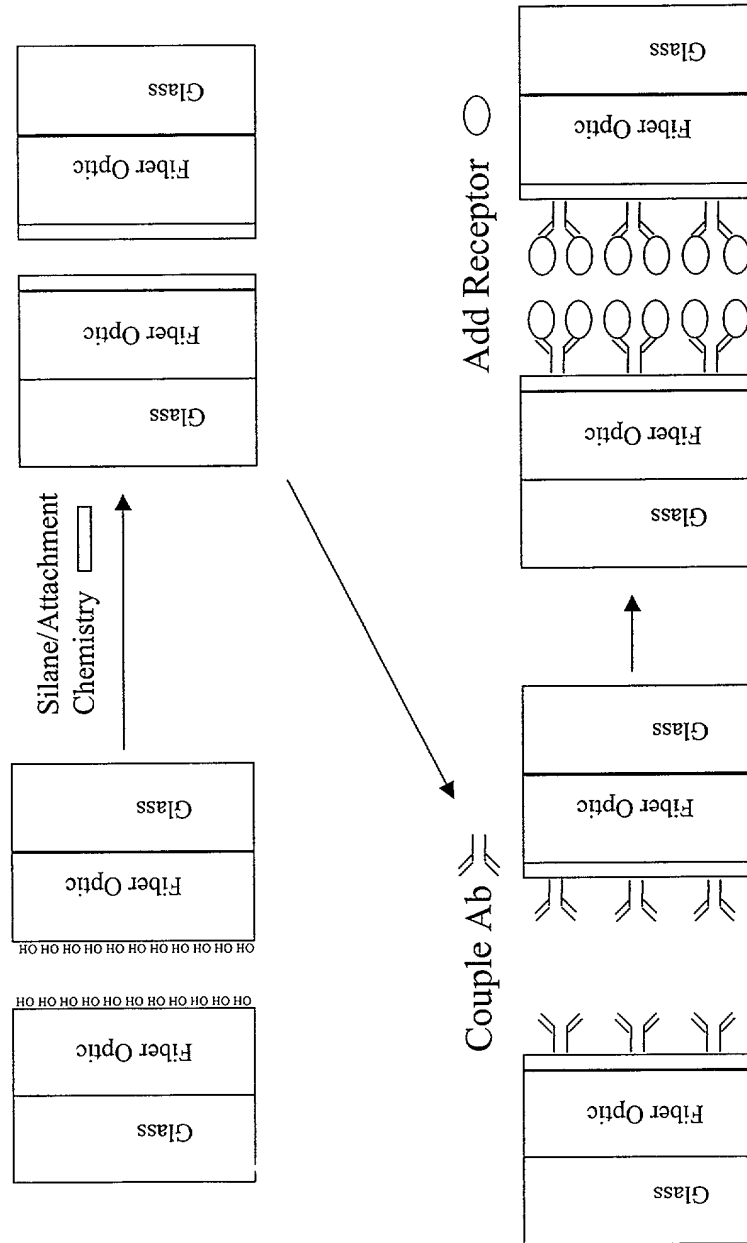
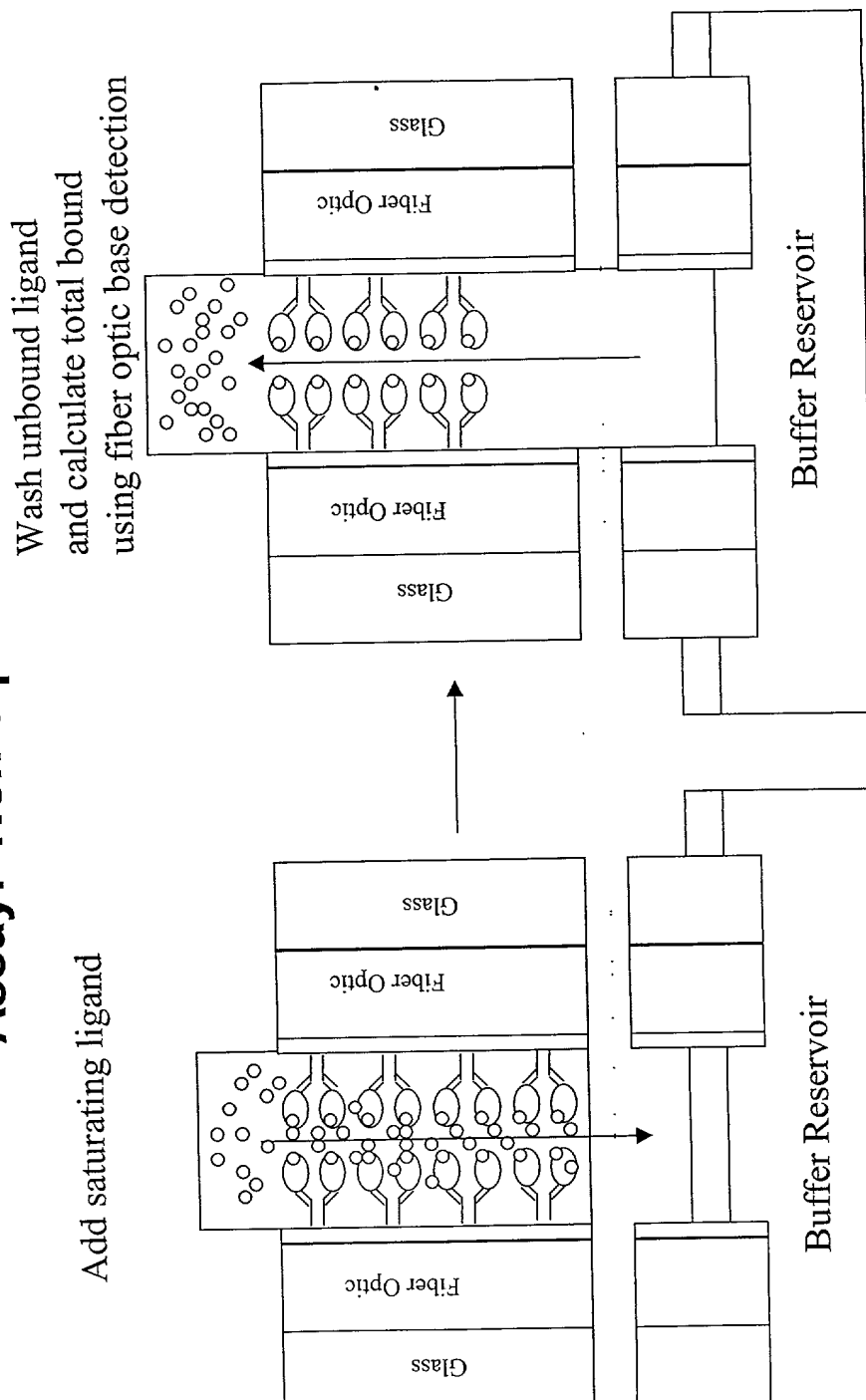


FIG. 33E

Figure 34 Capillary Based Receptor Binding Assay Non-equilibrium



**Figure 34 (cont. 1). Capillary Based Receptor Binding
Assay: Non-equilibrium**



**Figure 34 (cont. 2). Capillary Based Receptor Binding
Assay: Non-equilibrium**

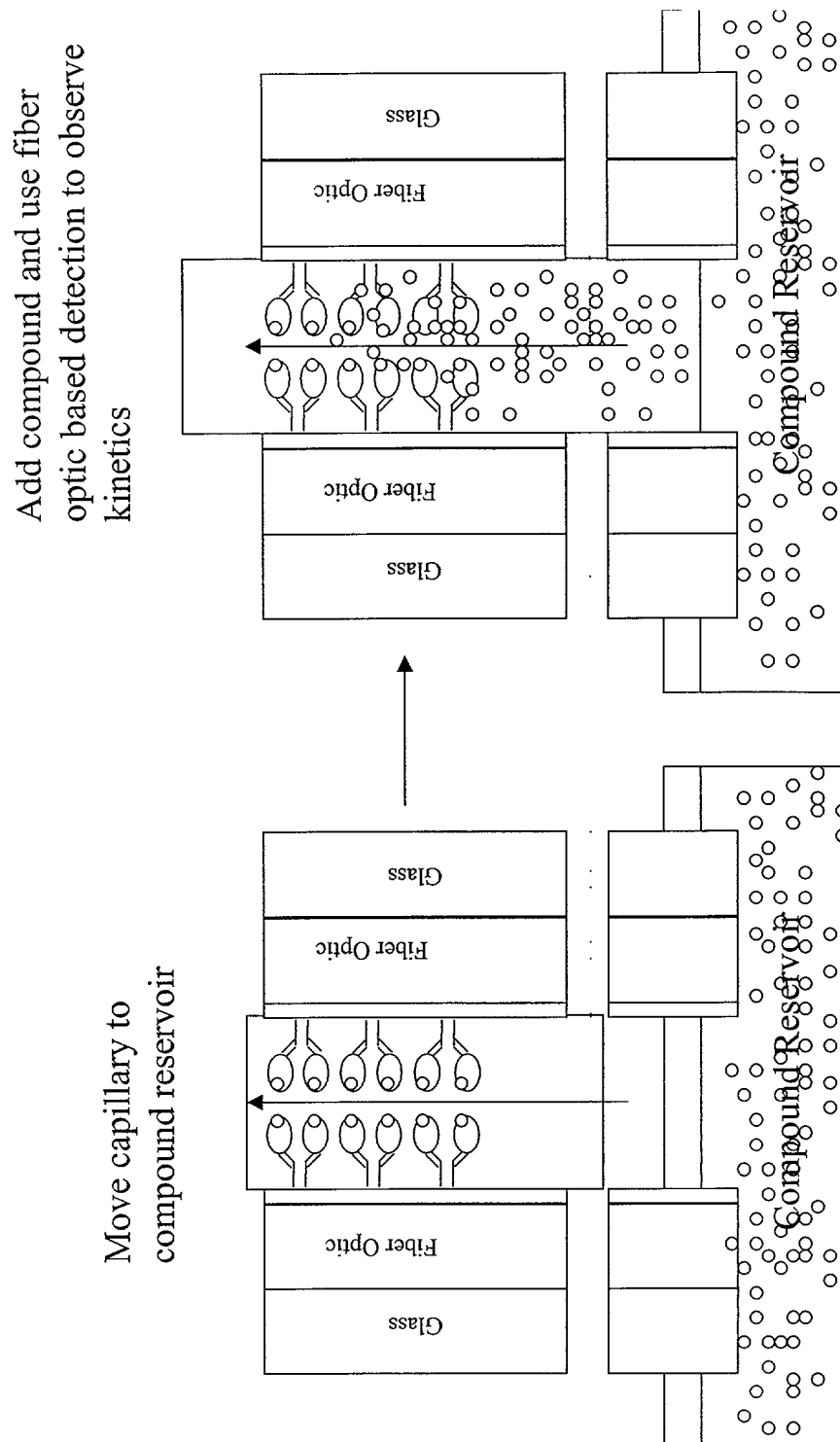


Figure 34 (cont. 3). Capillary Based Receptor Binding Assay: Non-equilibrium

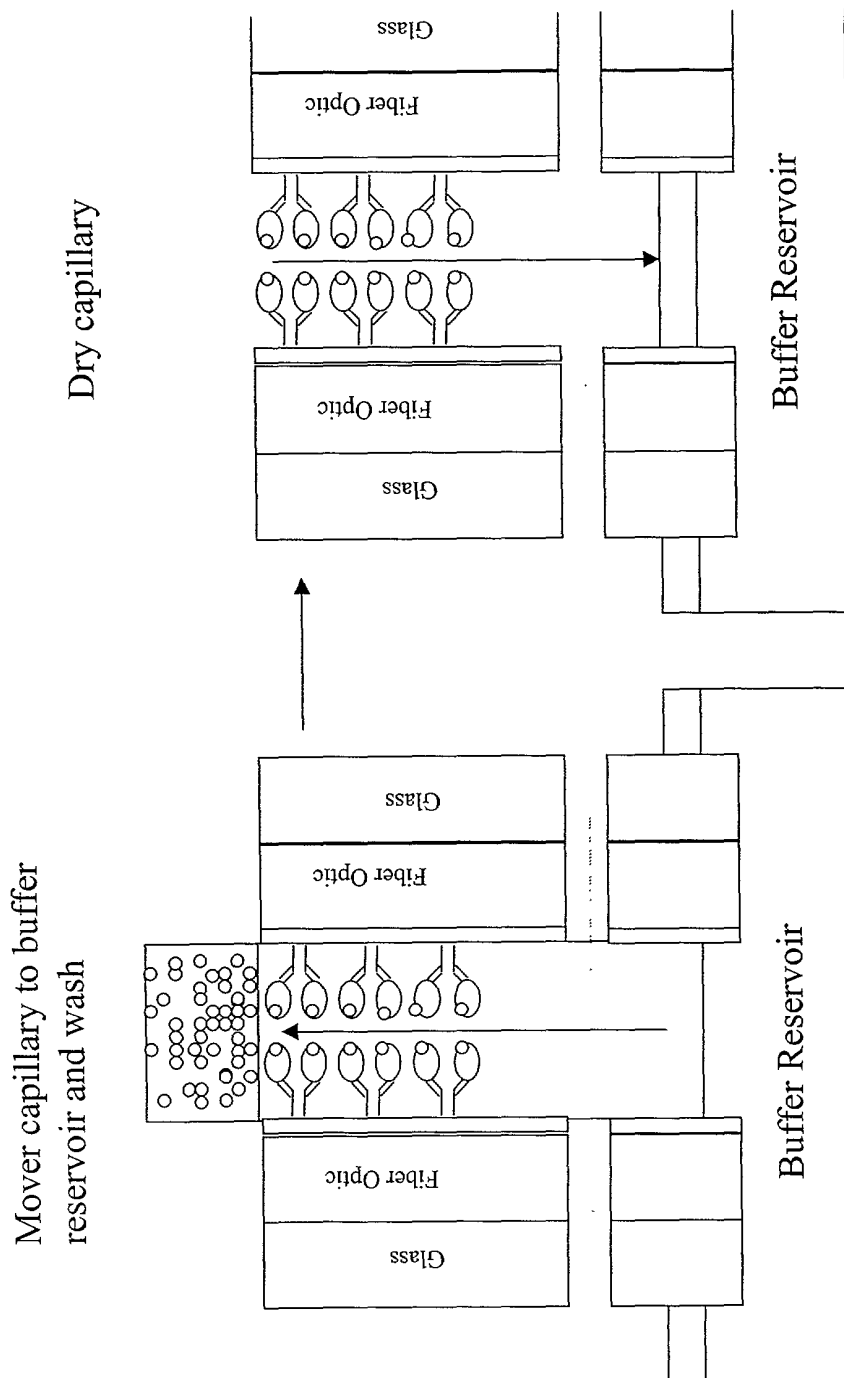
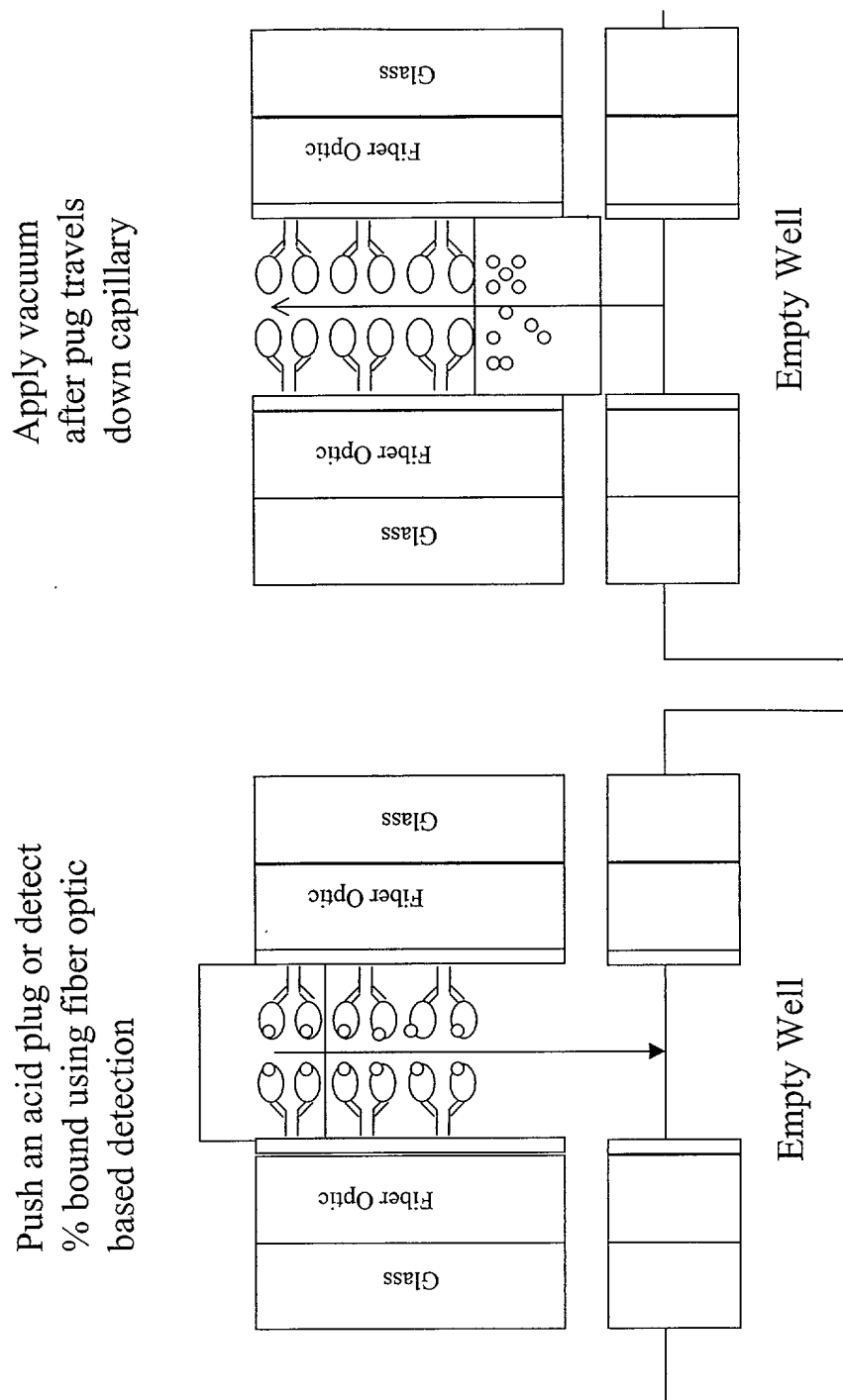
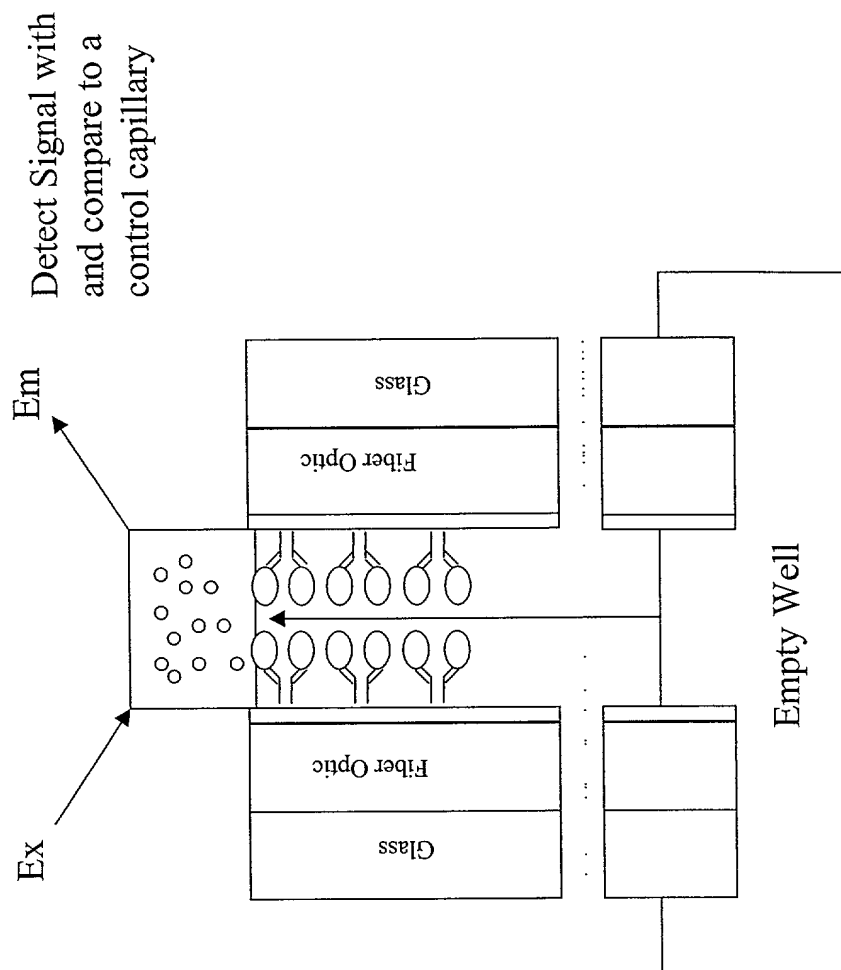


Figure 34 (cont. 4). Capillary Based Receptor Binding Assay: Non-equilibrium



205120-42000T

**Figure 34 (cont. 5). Capillary Based Receptor Binding
Assay: non-equilibrium**



Parameter	Value	Unit
Mean body weight	1.2	kg
Mean body length	10.5	cm
Mean body width	4.5	cm
Mean body depth	3.5	cm
Mean body height	2.5	cm
Mean body mass	1.2	kg
Mean body volume	1.2	kg
Mean body density	1.2	kg
Mean body temperature	1.2	kg
Mean body pH	1.2	kg
Mean body osmolarity	1.2	kg
Mean body conductivity	1.2	kg
Mean body resistivity	1.2	kg
Mean body capacitance	1.2	kg
Mean body inductance	1.2	kg
Mean body impedance	1.2	kg
Mean body admittance	1.2	kg
Mean body reactance	1.2	kg
Mean body susceptance	1.2	kg
Mean body power factor	1.2	kg
Mean body efficiency	1.2	kg
Mean body loss factor	1.2	kg
Mean body quality factor	1.2	kg
Mean body coupling factor	1.2	kg
Mean body isolation factor	1.2	kg
Mean body return loss	1.2	kg
Mean body insertion loss	1.2	kg
Mean body reflection coefficient	1.2	kg
Mean body transmission coefficient	1.2	kg
Mean body scattering parameter	1.2	kg
Mean body S-parameter	1.2	kg
Mean body T-parameter	1.2	kg
Mean body Z-parameter	1.2	kg
Mean body Y-parameter	1.2	kg
Mean body ABCD-parameter	1.2	kg
Mean body h-parameter	1.2	kg
Mean body g-parameter	1.2	kg
Mean body f-parameter	1.2	kg
Mean body b-parameter	1.2	kg
Mean body d-parameter	1.2	kg
Mean body e-parameter	1.2	kg
Mean body f-parameter	1.2	kg
Mean body g-parameter	1.2	kg
Mean body h-parameter	1.2	kg
Mean body i-parameter	1.2	kg
Mean body j-parameter	1.2	kg
Mean body k-parameter	1.2	kg
Mean body l-parameter	1.2	kg
Mean body m-parameter	1.2	kg
Mean body n-parameter	1.2	kg
Mean body o-parameter	1.2	kg
Mean body p-parameter	1.2	kg
Mean body q-parameter	1.2	kg
Mean body r-parameter	1.2	kg
Mean body s-parameter	1.2	kg
Mean body t-parameter	1.2	kg
Mean body u-parameter	1.2	kg
Mean body v-parameter	1.2	kg
Mean body w-parameter	1.2	kg
Mean body x-parameter	1.2	kg
Mean body y-parameter	1.2	kg
Mean body z-parameter	1.2	kg
Mean body aa-parameter	1.2	kg
Mean body bb-parameter	1.2	kg
Mean body cc-parameter	1.2	kg
Mean body dd-parameter	1.2	kg
Mean body ee-parameter	1.2	kg
Mean body ff-parameter	1.2	kg
Mean body gg-parameter	1.2	kg
Mean body hh-parameter	1.2	kg
Mean body ii-parameter	1.2	kg
Mean body jj-parameter	1.2	kg
Mean body kk-parameter	1.2	kg
Mean body ll-parameter	1.2	kg
Mean body mm-parameter	1.2	kg
Mean body nn-parameter	1.2	kg
Mean body oo-parameter	1.2	kg
Mean body pp-parameter	1.2	kg
Mean body qq-parameter	1.2	kg
Mean body rr-parameter	1.2	kg
Mean body ss-parameter	1.2	kg
Mean body tt-parameter	1.2	kg
Mean body uu-parameter	1.2	kg
Mean body vv-parameter	1.2	kg
Mean body ww-parameter	1.2	kg
Mean body xx-parameter	1.2	kg
Mean body yy-parameter	1.2	kg
Mean body zz-parameter	1.2	kg
Mean body aa-parameter	1.2	kg
Mean body bb-parameter	1.2	kg
Mean body cc-parameter	1.2	kg
Mean body dd-parameter	1.2	kg
Mean body ee-parameter	1.2	kg
Mean body ff-parameter	1.2	kg
Mean body gg-parameter	1.2	kg
Mean body hh-parameter	1.2	kg
Mean body ii-parameter	1.2	kg
Mean body jj-parameter	1.2	kg
Mean body kk-parameter	1.2	kg
Mean body ll-parameter	1.2	kg
Mean body mm-parameter	1.2	kg
Mean body nn-parameter	1.2	kg
Mean body oo-parameter	1.2	kg
Mean body pp-parameter	1.2	kg
Mean body qq-parameter	1.2	kg
Mean body rr-parameter	1.2	kg
Mean body ss-parameter	1.2	kg
Mean body tt-parameter	1.2	kg
Mean body uu-parameter	1.2	kg
Mean body vv-parameter	1.2	kg
Mean body ww-parameter	1.2	kg
Mean body xx-parameter	1.2	kg
Mean body yy-parameter	1.2	kg
Mean body zz-parameter	1.2	kg

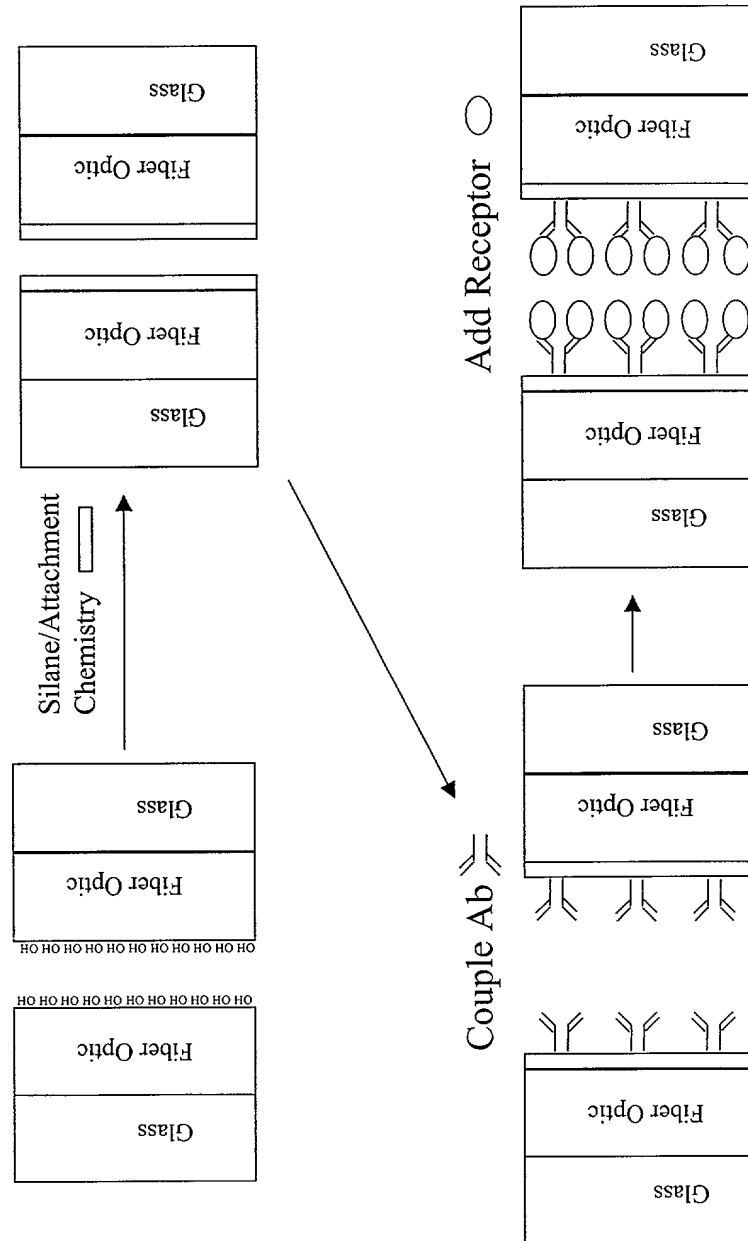


Figure 35 (cont. 1). Capillary Based Receptor Binding Assay: Equilibrium

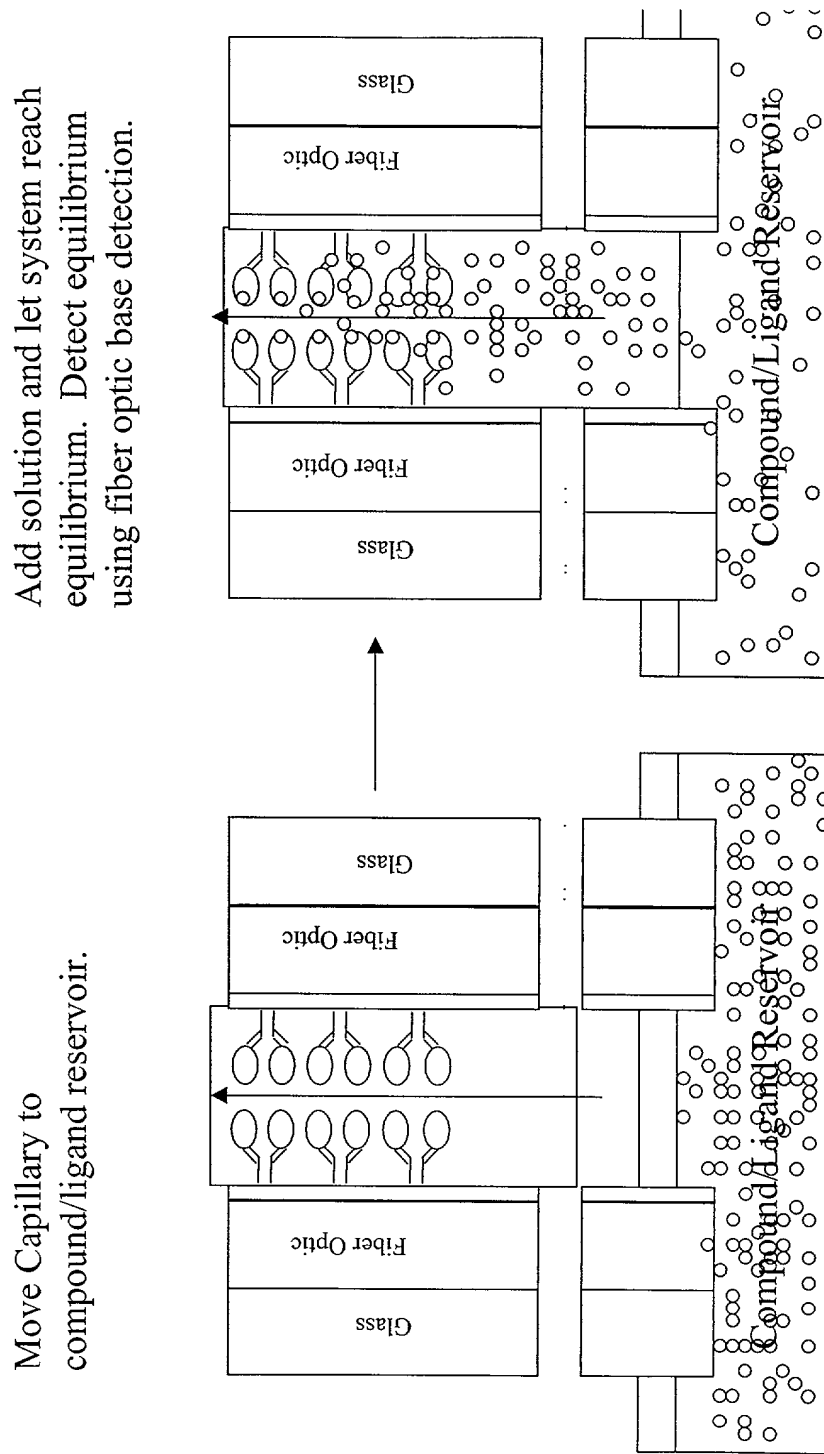


Figure 35 (cont . 2). Capillary Based Receptor Binding Assay: Equilibrium

Move capillary to a buffer reservoir and wash capillary with buffer. Detect % bound using fiber optic based detection.

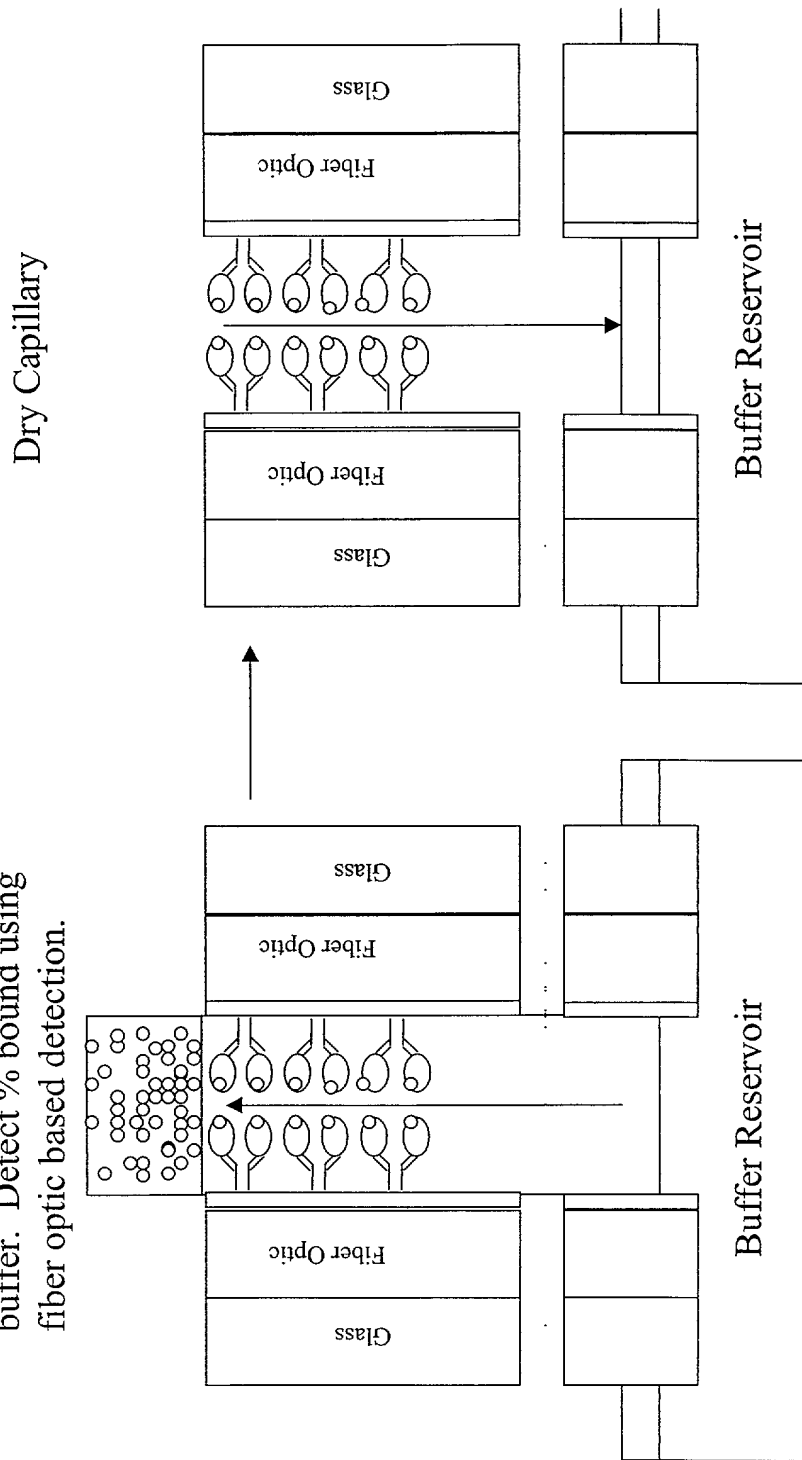
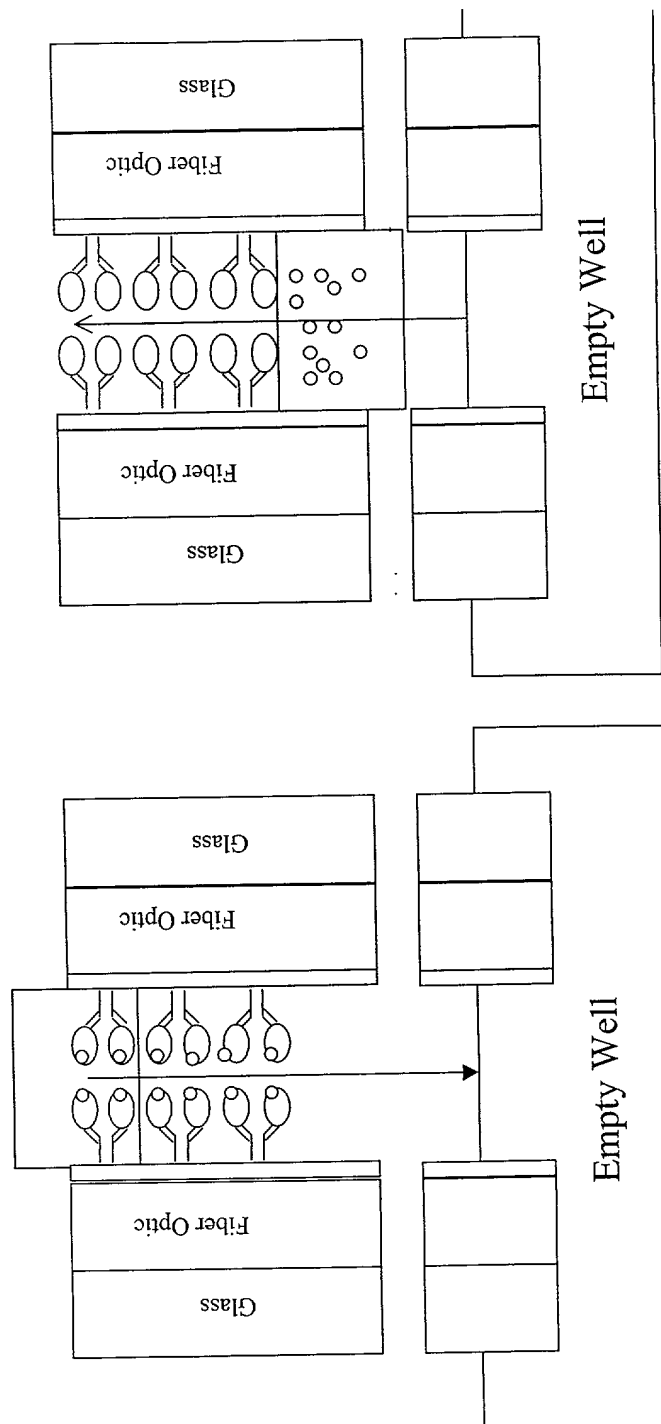


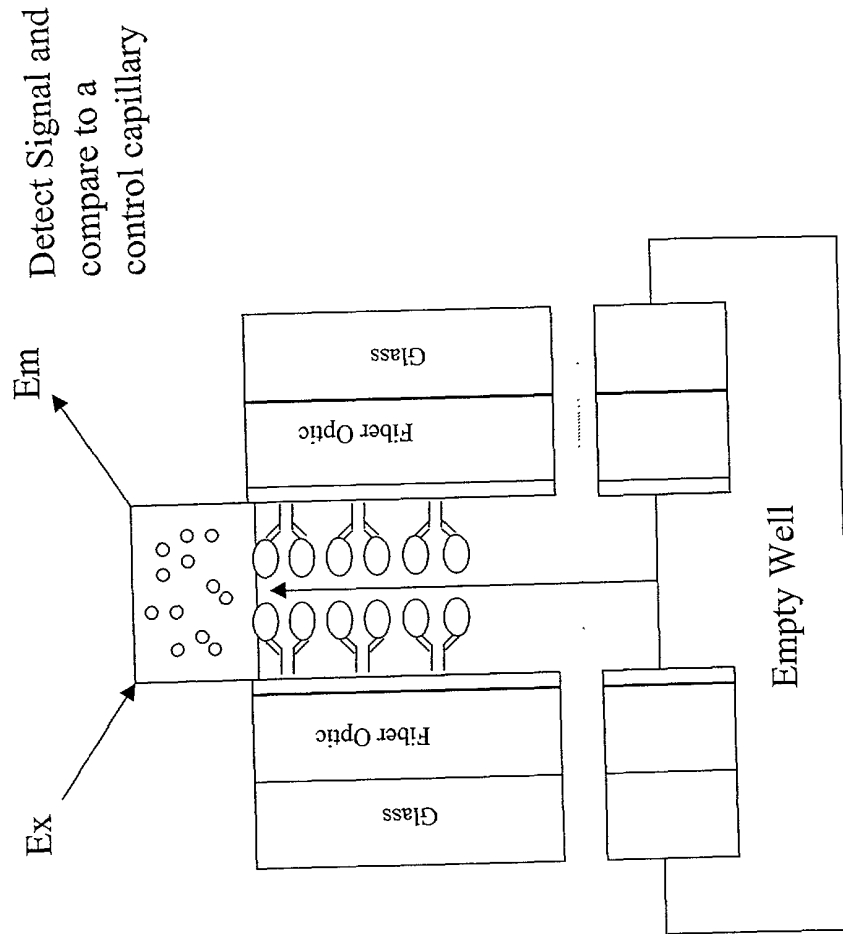
Figure 35 (cont. 3). Capillary Based Receptor Binding Assay: Equilibrium

Detect signal using fiber optic
base detection or elute bound
ligand with acid.

Apply vacuum
after pug travels
down capillary



**Figure 35 (cont . 4). Capillary Based Receptor Binding
Assay: Equilibrium**



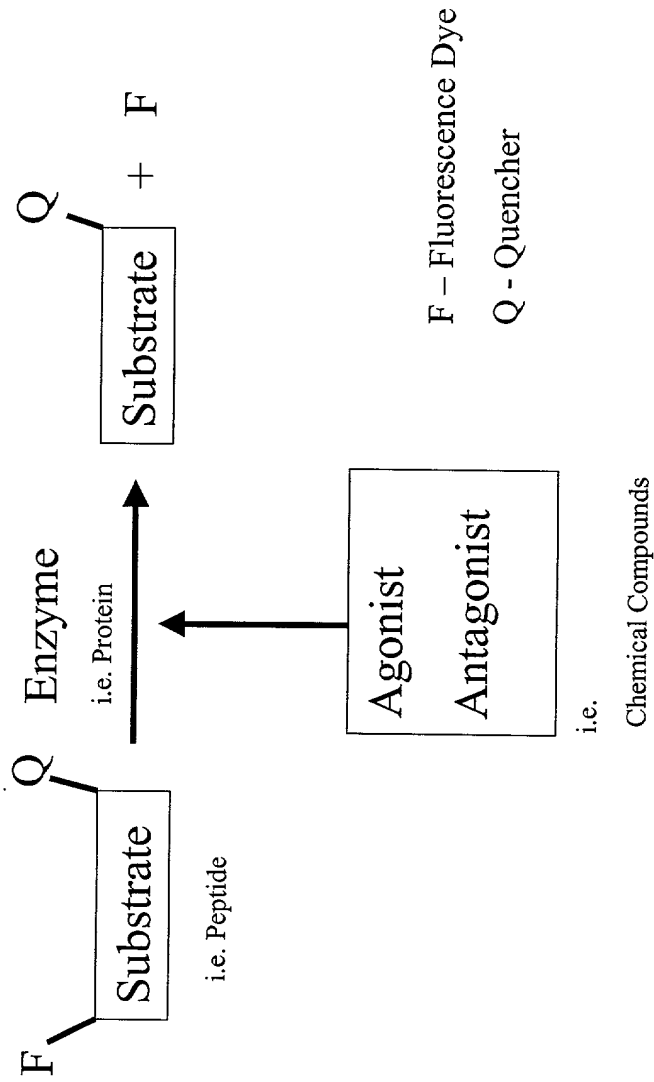
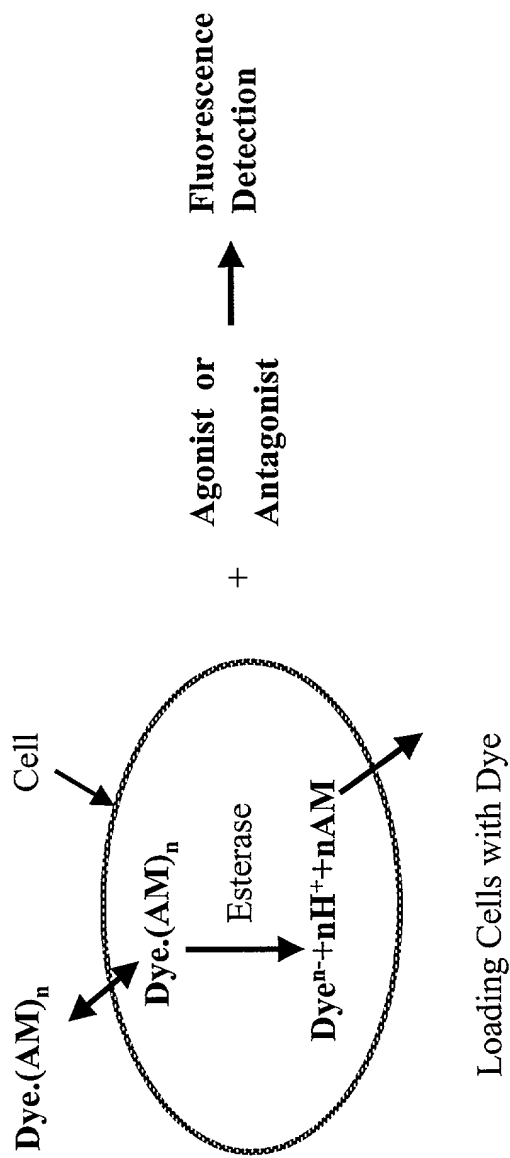


Figure 36



Assay Based on Tracking Cytosolic $[\text{Ca}^{++}]$

Figure 37

Protein Array & Cell Array

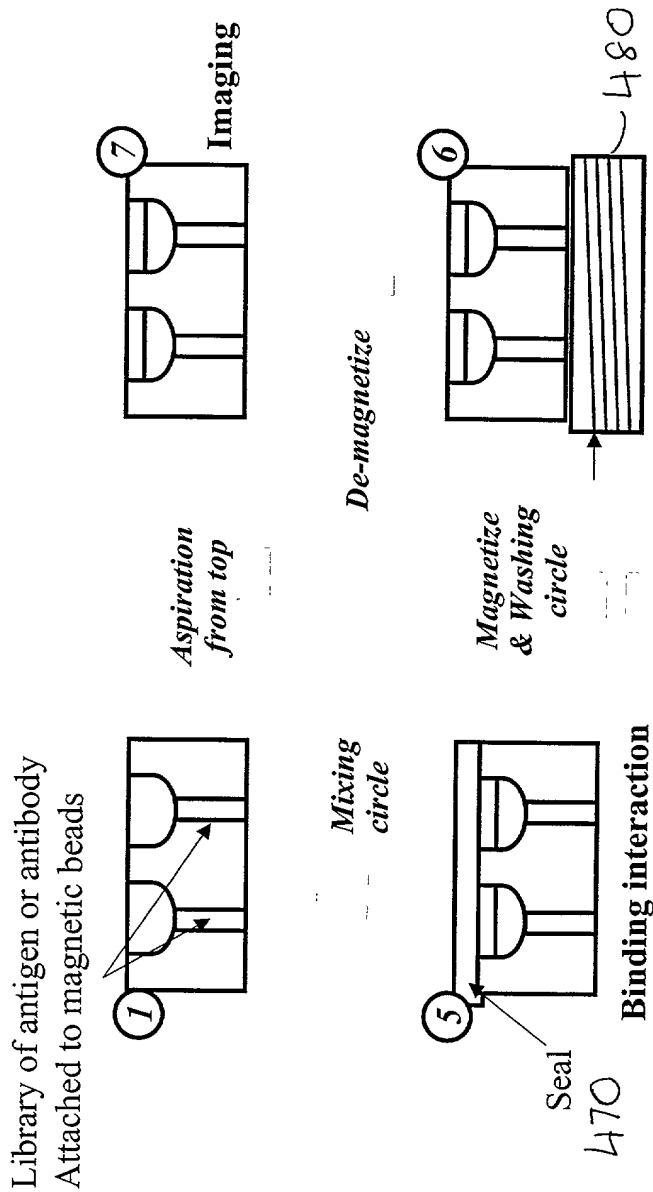


FIG. 38A

Fluid-Array™ XHTS

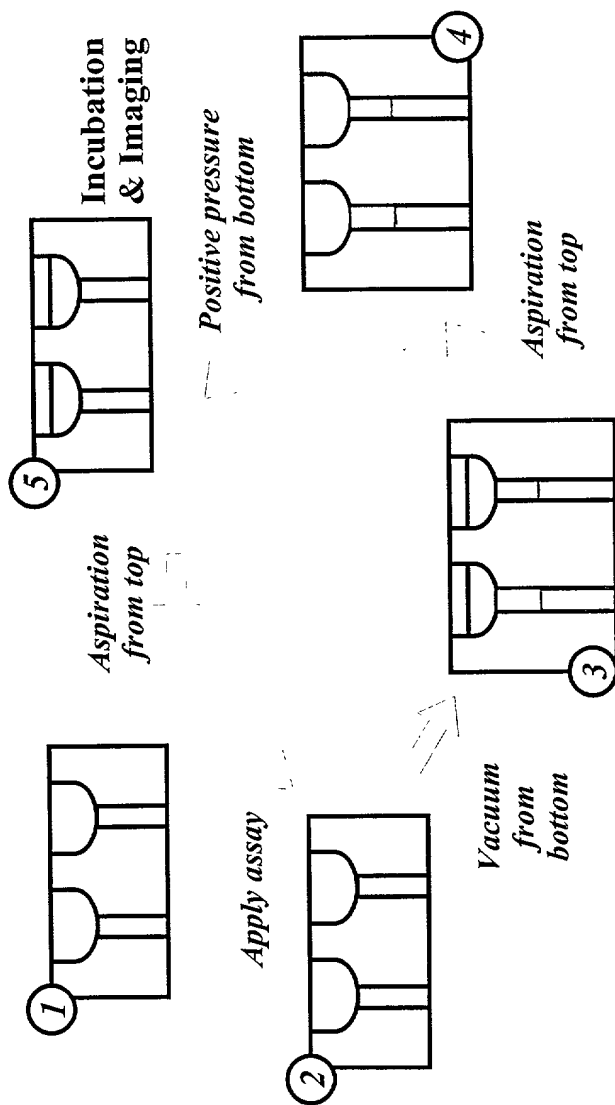
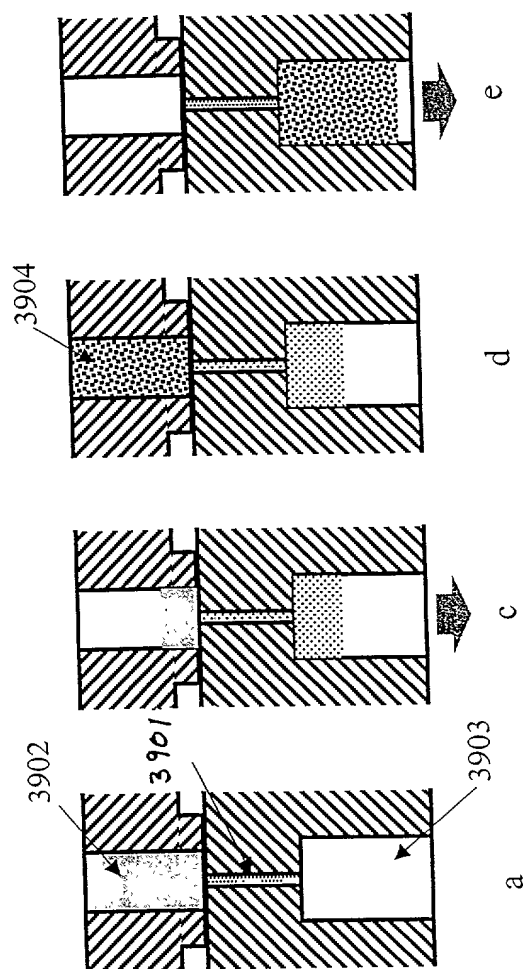


FIG. 3BB

Fig. 40 Metering with through hole plates and mixing



- 3901 – compound and compound storage chamber
- 3902 – reagent A (i.e. enzyme) in through hole plate A
- 3903 – mixing/reaction chamber
- 3904 – reagent B (i.e. substrate) in through hole plate B

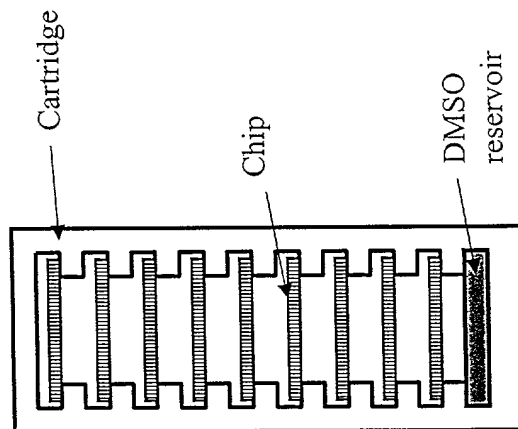


Fig. 39 One embodiment of the capillary array cartridge design

2007-12-20